THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—12TH YEAR. SYDNEY: SATURDAY, JULY 11, 1925. No. 2.

Table of Contents

SACRAL ANÆSTHESIA.[1]

By L. J. J. NYE, M.B., Ch.M. (Sydney),
AND
C. L. PAINE, M.B., Ch.M. (Sydney),
Atherton North Queensland.

THERE is an old saying that novelty often creates opposition in the minds of men, but sacral anæsthesia is no longer a novelty and has now passed well beyond the experimental stage. Since it was first introduced by Cathelin in 1900 it was slow to gain favour until 1912 when Stœckel and Gross used it extensively in perineal and rectal surgery. Their example has been followed by many other surgeons until the present day when it is now firmly established as an efficient and safe method of inducing anæsthesia in pelvic, bladder and rectal surgery.

Before dealing with the technique of sacral anæsthesia it is necessary to have a very accurate knowledge of the anatomy of the parts involved and we will therefore review in the first place the anatomy of the sacrum and the nerves which traverse its canals.

[1] Read at a meeting of the Queensland Branch of the British Medical Association on May 1, 1925.

Anatomy.

The sacrum is composed of five segments, the body of the first being the largest, while the succeeding ones diminish in size from above downwards. It presents an anterior or pelvic surface, a posterior or dorsal surface and two lateral surfaces.

On the anterior surface between each segment is a ridge representing the line of fusion of these bodies and at each end of these ridges are the anterior sacral foramina. These transmit the anterior branches of the sacral nerves and the lateral sacral arteries.

The posterior surface is much narrower than the anterior surface and bears a ridge running down the middle which represents the fused rudimentary spinous processes of the sacral vertebræ.

The fifth and sometimes the fourth processes remain undeveloped, so that the laminæ do not meet in the middle line, the resulting gap being known as the *hiatus sacralis*, the undeveloped laminæ forming the edge of this hiatus being termed the sacral cornua. Stretching across the lower border of this gap is a thin fibrous membrane called the sacrococcygeal membrane.

Corresponding with the position of the anterior sacral foramina, the posterior wall bears the posterior sacral foramina. These are smaller and

less regular in shape than those on the anterior surface and it is through these that the posterior sacral nerves find their way to the soft tissues.

There are four sacral foramina and only rarely is a fifth foramen present, the fifth sacral nerve emerging just above the sacral cornua.

The continuation of the spinal canal in the sacrum is called the sacral canal with which the anterior and posterior sacral foramina communicate; it is filled with vascular adipose tissue through which run:

(i.) The dural sac which ends at the lower border of the second sacral vertebra or about eight centimetres up from the *hiatus sacralis*. In the dural sac is the *filum terminale* which is continued downward to its attachment to the coccyx.

(ii.) The sacral and coccygeal nerves which traverse their respective foramina.

(iii.) The sacral intraspinous venous plexus.

Nerve Distributions.

The pelvic organs are supplied chiefly by nerves arising from the sacral (fourth and fifth lumbar and first, second and third sacral) and pudendal (second, third and fourth sacral) plexuses.

The pelvic floor is supplied by the branches of the pudendal and coccygeal plexuses with a contribution from the perineal branch of the posterior cutaneous nerve of the thigh (small sciatic) arising from the first, second and third sacral nerves.

The external genitalia are supplied by the pudendal nerve (internal pudic) and perineal branch of the posterior cutaneous nerve of the thigh arising from the pudendal and sacral plexuses respectively, together with the ilio-inguinal (twelfth thoracic and first lumbar) and genito-femoral (first and second lumbar) nerves from the lumbar plexus.

Anæsthetic Solution.

Most authorities agree that "Novocaine hydrochloride" is the most satisfactory drug to use. The surgeons at the Mayo Clinic use 0.5% "Novocaine" with ten cubic centimetres of adrenalin added to each hundred cubic centimetres of solution.

Labat[1] recommends a 1% solution, while Harris, of Chicago, uses a 0.7% solution to which he adds 1.8 cubic centimetres of 50% solution of sodium chloride to each hundred cubic centimetres.

The syringe we have been using is a Becton Dickenson, equipped with a set of ten flexible steel needles of various lengths to be used according to the depth of each foramen.

General Technique.

After the field has been thoroughly sterilized, a pillow is placed under the pelvis to raise the sacrum and thus to display the landmarks more effectively.

The patient is then made quite comfortable on the table, so that he will not be fatigued by remaining in a cramped position during a prolonged operation. The services of an attractive nurse should be obtained to act as a psychist and to engage the patient in pleasant conversation throughout the operation, while the surgeon should be as gentle as possible in all his manipulations and assure the patient that beyond a few preliminary pricks he will suffer no pain. A cutaneous wheal should be raised by injecting a small amount of anæsthetic solution with a fine needle at the sites at which the deep injections are to be made, thereby eliminating the pain which is experienced when the larger needle penetrates the tissue and which is terrifying to most subjects. The operator must remember that if he causes his patient to suffer severe pain he will lose the latter's confidence and cooperation.

The strictest attention to the above details is most important in local anæsthesia and contributes in a very large measure to its success.

Caudal Block.

Indication.

Caudal block is indicated for all operations on the lower part of the rectum, the anus, the perineum or the genitalia. It is a very popular method for cystoscopy and is also useful in severe cases of sciatica.

Technique.

The sacral cornua are palpated and a wheal is raised at the lower end of the sacral hiatus. The injecting needle with stilette is pushed upwards towards the sacral canal. At the entrance to the canal a slight resistance will be encountered owing to the sacro-coccygeal membrane which covers its lower extremity. By gentle manipulation and by keeping the shoulder of the needle downwards it should be made to penetrate the canal for about five centimetres.

The stilette is then withdrawn and the aspiration test applied before injecting the solution.

The syringe is now filled with from twenty to forty cubic centimetres of solution which are slowly injected into the canal. Anæsthesia is complete in from ten to fifteen minutes, the best guide being the anal sphincter which becomes completely relaxed when surgical anæsthesia is established.

Trans-Sacral Block.

Indications.

Trans-sacral block may be employed for all operations on the anus, rectum, bladder, prostate, vagina and cervix. When the anterior abdominal wall is to be opened, it is, of course, associated with local nerve blocking.

Technique.

In this method the sacral nerves are blocked by injections through each of the sacral foramina, so that the operator requires to have a very accurate knowledge of the position of each foramen and the depth of its canal. The first foramen is two centimetres, while the fourth is 1.5 centimetres from the middle line and a straight line joining these two would intersect the second and third foramina.

The first foramen is 2.5 centimetres above the second, the second is two centimetres above the

third, the third is 1.5 centimetres above the fourth foramen and the fourth is 1.5 centimetres above the fifth nerve.

The position of the second is the most useful landmark. It is situated one centimetre medial to and below the posterior superior iliac spine.

In stout subjects we have found difficulty in locating each foramen readily with the needle and to obviate this we have devised a metal guide as in Figure II., which Messrs. Richard Thomson and Company, of Sydney, have made to our direction. This greatly facilitates the operation.

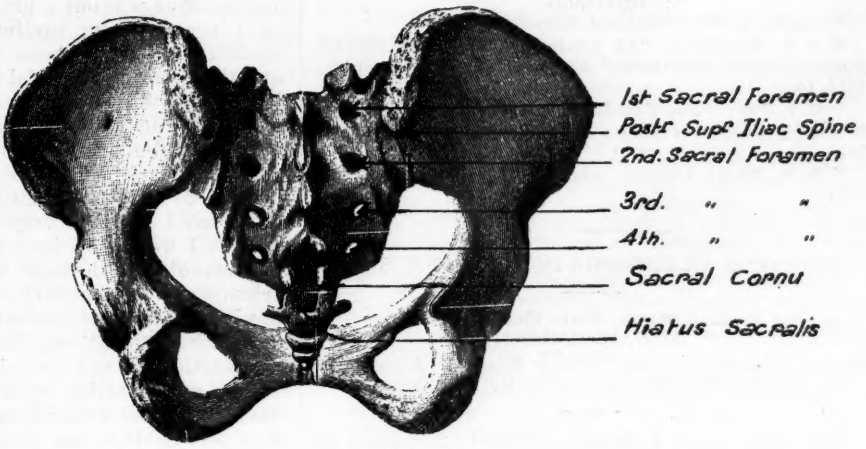

FIGURE I.
Diagram Showing Salient Points in Anatomy of the Sacrum.

The second sacral foramen on each side is first located by inserting the needle one centimetre to the inner side and below the posterior superior iliac spine; it is then pushed down till it strikes the bone. By gently probing around the edge of the foramen is felt and the needle pushed the required distance along the canal. These needles are left in position in the guide, while the other foramina are located and injected. The fifth nerve usually has no foramen and is injected immediately above the cornua. In inserting the needles into each canal one has to bear in mind that the first canal is 2.5 centimetres, the second is two centimetres, the third is 1.5 centimetres and the fourth is 1.5 centimetres in length and if the needle projects beyond these depths it will enter the pelvic cavity, but in stout patients the needle may sometimes be inserted five to seven centimetres before it reaches the sacrum.

The quantity of solution injected into each foramen also varies with the depth of the canal; thus six cubic centimetres are injected into the first, five cubic centimetres in the second, four cubic centimetres in the third, three cubic centimetres in the fourth and two cubic centimetres in the fifth nerve.

The position of these foramina is not always constant as has been shown by Thompson[2] who compared a large number of specimens, hence one sometimes has a little difficulty even when using the guide.

The needles must be introduced carefully, care being taken not to traumatize the bone unduly; before the anæsthetic solution is injected the aspiration test must always be applied.

Mild toxic symptoms, such as pallor and accelerated pulse, have been described by Farr[3] who states that they are seldom alarming. In our experience the patients describe a "peculiar sensation" when the nerves were being injected, but we have noted no toxic symptoms whatsoever.

The great advantage of this method over other methods of anæsthesia is that the serious complications which sometimes follow spinal anæsthesia, such as prolonged headaches, temporary paralyses, septic meningitis, and the danger of pneumonia, acidosis and the like after a general anæsthesia are entirely obviated.

Kolischer[4] reports excellent results in a series of observations made on 1,800 patients at the urological clinic of Illyés, at Budapest, and he states that whatever failures have occurred have been due to faulty technique. Moon,[5] who has had much experience in its use, considers it the method of choice in rectal surgery, because post-operative complications are lessened and there is more complete relaxation.

In our limited experience we have had excellent results and we are especially enthusiastic about caudal block which is an extremely simple procedure and has quite a large field of usefulness.

In conclusion we would lay stress on the necessity of a thorough knowledge of the anatomy of the parts involved, strict attention to asepsis and technique and particularly to gentle manipulation.

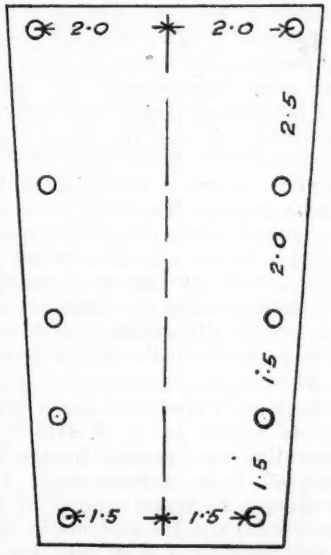

FIGURE II.

References.

(1) Gaston Labat: "Regional Anæsthesia," 1922.

(2) J. E. Thompson: "An Anatomical and Experimental Study of Sacral Anæsthesia," *Annals of Surgery*, December, 1917, page 718.

(3) R. E. Farr: "Practical Local Anæsthesia," 1923.

(4) G. Kolischer: *Urologic and Cutaneous Review*, July, 1924.

(5) R. E. Moon: *American Journal of Surgery*, November, 1924.

NARCO-LOCAL ANÆSTHESIA IN GENERAL SURGERY.

By C. E. Corlette, M.D., Ch.M. (Sydney), D.P.H. (Cambridge),

Senior Honorary Surgeon, Sydney Hospital; Lecturer in Clinical Surgery, The University of Sydney.

For many years I thought of local anæsthesia as suitable only for small and altogether minor operations. All my major operations were done as a matter of course under general anæsthesia. I was aware that operations on the abdomen, pelvis and lower extremities were done in some clinics by spinal anæsthesia (or analgesia), but I had read of occasional unfortunate results and did not let my interest pursue it further.

I think the vast majority of surgeons in Australia would say that their own mental attitude and their own practice today is more or less similar.

But as for myself, I have to acknowledge that in this regard my mental attitude and my practice is not the same as it was. I find that as I think and as I experiment, I am changing. My experience has become enlarged and it may be useful to others to discuss the matter here, though as my experience is still growing and I am still learning, every month makes some difference. But after all in our profession we need not apologize for that.

Let me digress a moment here to discuss a point of terminology. Some writers have tried to reserve the term "anæsthesia" for the condition induced by inhalation drugs and they suggest that it is desirable to use the term "analgesia" for that produced by local methods. The former term strictly means a condition of loss of feeling; the latter implies loss of pain sensation only. It is undeniable, however, that a true anæsthesia is producible by the injection drugs. Yet it would have been a real convenience if usage had gone the way of distinguishing the terms as proposed. But usage has apparently settled it otherwise and it seems too late to insist on the separate denotation.

The first tentative step in the enlargement of my experience I took over seven years ago. Influenced by an article by A. J. Hull[1] on a technique of operating on inguinal hernia in which he recommended local anæsthesia, I tried it, using the technique he recommended. I found it completely successful and the patients as well pleased with the anæsthesia as I was with the operation. I have done this operation in suitable cases ever since and have now done a large number. At first it was always done without a preliminary narcotic. Later on I began to try preliminary narcosis so as to abolish any nervousness on the part of patients and this was so successful that I have since adopted it as a routine procedure. It is a great improvement, making the local anæsthesia suitable for any class of patient, however nervous.

After this I began to use local anæsthesia in hernias of longer standing and larger size and in these too I found it very satisfactory.

Next I was asked by a patient to operate on his hæmorrhoids with local anæsthesia. This was a triumphant success and after that I offered it to any who desired it in that operation. I have done many since to my own and the patients' complete satisfaction. I can now speak from experience and I have no hesitation in saying that a hæmorrhoids operation done under local infiltration is in every way preferable to one under ether. I can commend it in the same way, also from experience, for operating on anal fissure and on anal fistula.

Further, I was asked by several candidates for appendicectomy who had a dread of a general anæsthetic, if I would do the operation for them under local anæsthesia. One of these had been operated on by me a couple of years earlier for hernia by local anæsthesia. The patients were to undergo the interval operation, not that for acute appendicitis. I did these also with great success and satisfaction. I found, as others have found, that if the attachments of the caecum or appendix were pulled on, it made the patient feel a pain and inclined to be sick, but I found that if sufficient care is taken to be gentle in manipulation, the operation can be done without pain or sickness being caused. Up to the present no patient has vomited. Though I cannot speak from experience yet about the use of local anæsthesia in acute appendicitis, I feel encouraged to try now that I know something about the methods of handling that are advisable. Writers on the subject have varying opinions as to its applicability to cases of acute appendicitis.

By degrees I have advanced to other conditions. One patient with a fractured patella was too terrified to take a general anæsthetic and asked if I would do him with a local. This I did and it was in every way as great a success as was my first attempt at a hæmorrhoids operation under local anæsthesia. In the past six months I have done two fractured patellas in this way. Both were entirely successful.

Another case was the removal of a torn and loosened medial meniscus from the knee joint. It was quite as successful as the patella operations—painless and bloodless—and eminently satisfactory both to operator and to patient. I have since done another of the same kind with an equally happy result.

Using infiltration methods I have done a few, not many, block dissections of the submaxillary triangles of the neck for malignant disease of the lip. I have removed recently the sterno-mastoid in a block dissection of the posterior triangle and of the great vessels of the neck, the patient sleeping

through it all. This man was seventy-six years of age and general anæsthesia with him would have been very risky.

I find that in such cases the operation takes much more time than when a general anæsthetic is used, but when one has learnt what to do, it can be carried out quite painlessly and it has one decided advantage over ether in that it is bloodless and facilitates a very clean dissection. In its cleanness and bloodlessness it is like the dissections that used to be made in former years under chloroform anæsthesia, but better. It is a shockless method, despite its greater consumption of time. Even with a patient under ether I have sometimes adopted the expedient of infiltrating with 1 in 150,000 adrenalin solution in order to get the same bloodless field, but this, too, makes the operation longer.

Intratracheal insufflation of ether is much employed for neck operations. Personally, I have seen no ill results, but some of my friends think that with it, at all events in long operations, there is a higher post-anæsthetic morbidity rate and death rate. It is, however, convenient for the operator and this has had a good deal to do with its popularity. Local anæsthesia likewise avoids the interference of an anæsthetist on the field. It cannot be said, however, to be no trouble. On the other hand, the operator who will not consent to take any amount of trouble to get the very best results at the least cost to the patient is not the sort of man I should like to have operate on me. That is not to say that local anæsthesia is better than or as good as general anæsthesia in these cases. That is one of the things I would very much like to know, but I do not. Probably sometimes it is, sometimes it is not.

Using nerve-block methods of anæsthesia (described beyond), I have added to my satisfactory experiences. I recall two recent operations. One was the repair of a fractured olecranon in a patient who had a few weeks previously been operated on under a general anæsthetic in another hospital. This man, who was thus able to compare his experiences, expressed most emphatically his preference for the second method. The other was a secondary operation on an elbow ruined by the blade of a chaff-cutter. I had to saw off the distal articular surface of the humerus at the level of the condyles and then sawed off the proximal ends of his radius and ulna. This was effected without pain, although he still had a little common sensation present in the skin of his arm. These two examples show what a boon such methods of producing analgesia offer to the practitioner in a country district where other professional help is hard to get. Yet I must say frankly that I have not found analgesia so complete nor so sure in nerve-block work or at all events in brachial nerve-block as I get generally and so easily in infiltration methods. But from what one reads others seem to get complete anæsthesia easily. Perhaps my technique is not yet good enough.

I may add to my story of experiences two others still more recent:

> The patient in this case was a well-known surgeon on whom it was thought necessary to operate for chronic suppuration of the maxillary antrum on both sides. He was in a condition of grave anæmia and his cardiac condition was such that a general anæsthetic could not be given. This had for a long time made it impossible to operate. Except for alcohol injections, this particular field was new ground to me, but having been asked to help, I made a completely successful bilateral block, first of the ethmoidal nerves on the medial wall of the orbit and then of the maxillary nerves in the pterygo-maxillary fossa as they issue from the *foramen rotundum* at the base of the skull, together with adrenal injection at the back of the maxilla amongst the branches of the internal maxillary artery. The anæsthesia produced was ideal on both sides and the operation dry and bloodless. The surgeon responsible for the operation remarked that it was the most bloodless operation on the antrum that had come within his experience. The patient had no recollection of the operation afterwards.

I am extremely glad to have had this experience, for it has shown me that resection of the upper jaw can now be carried out without the serious hæmorrhage and other difficulties and risks that have usually belonged to the operation. Knowing what I know now, I can believe Braun when he says, as he does in his book:

> Local anæsthesia has completely changed the operation for resection of the upper jaw. It cannot be considered a serious operation to-day, having lost its terrors and the difficulties and dangers have been materially lessened. . . . The operation can now be completed with certainty and without haste and loss of blood. The patients are as well after the operation as they were before; they are never collapsed. It is rarely necessary for them to take to their bed.

Obtaining anæsthesia by nerve-block of the third division of the fifth nerve at the *foramen ovale*, cervical plexus block and local infiltration, I have recently done a resection of the body of the lower jaw for malignant disease in a man whose condition was adjudged too bad for administration of ether. This patient said he felt no pain, but the operation was unsuccessful in that he afterwards succumbed to pneumonia. In this case anæsthesia of the lingual and mandibular nerves was evident almost at once, certainly in less than two minutes after injecting the trunk at the *foramen ovale*.

Subarachnoid spinal anæsthesia or rachianæsthesia as it is also very appropriately called, is well known by repute to every student, but it has no great vogue in Australian practice. Essentially it is a nerve-block procedure. Admitting that it presents some material for debate, it is unquestionably a valuable surgical resource, well suited to special needs. I have not used it as much as I might and probably should have done, but I recall some recent experiences.

I had to do a reamputation through the thigh for an old painful amputation stump in a man who after former experiences was anxious not to have ether again. He had the usual morphine and hyoscine and then stovaine rachianæsthesia. During the operation he engaged in conversation rationally and said he felt no pain, but next day his memory of all that happened was a complete blank.

He remembered nothing about leaving the ward or about the operation. Psychologically it was an ideal experience for a patient undergoing operation.

About the same time I did an abdomino-perineal operation for malignant disease of the rectum, removing also the perineum and the posterior wall of the vagina, in a woman of sixty-three. The operation was carried out under stovaine rachi-anæsthesia after hyoscine and morphine. She slept right through the operation and at the end showed no alteration of pulse or other symptom of shock. In the following week I had the same operation to do on another woman, but in this case the stovaine, although satisfactorily injected into the subarachnoid space, did not produce sufficient analgesia. Therefore gas-oxygen was given and produced (with the aid of the antecedent narcotic injection) a beautifully smooth and satisfactory general anæsthesia throughout the whole of a very long operation. At the close of the operation, as soon as the gas-oxygen was stopped, she became immediately conscious and answered questions. In her case also there was no evidence whatever of shock. Both made excellent recoveries. I mention this last case, not because it was an example of local anæsthesia of any kind, but in part to show that spinal injections do not always succeed and in part because I wanted to say that the preliminary injection of morphine and hyoscine is a very great aid to gas-oxygen anæsthesia, gas-oxygen anæsthesia being very easy to induce and carry on in a patient thus narcotized. Nitrous oxide with oxygen is therefore well adapted to function as a reserve to be called on temporarily at any stage of an operation under local anæsthesia where pain is expected or complained of.

Before proceeding to more direct consideration of practical details, it will be of advantage to find a point of view whereby we may orientate our position and develope principles to guide us. We want to do what is best and to act rationally. Let us, therefore, try to get a broad comparative view of surgical anæsthesia and analgesia. We can only find a proper perspective by getting everything into the picture and then standing back to look at it.

General Anæsthesia.

Though chloroform, ethyl chloride and plain nitrous oxide have each a useful place in special cases of general anæsthesia, it will be better for us to consider general anæsthesia chiefly as typified by ether and nitrous oxide-oxygen.

Advantages.

Beyond all dispute, the prime and outstanding reason for the use of general anæsthesia is its function in the abolition of pain, that is the promotion of analgesia. But there are other associated advantages. Besides analgesia a general anæsthetic produces narcosis. Through the narcotic effect the patient becomes unconscious. Two things follow from this. Firstly, the memory is obliterated. Secondly, the will is obliterated. Next, besides analgesia and narcosis the motor mechanism is subdued and if the anæsthesia is made sufficiently deep the voluntary muscles become passive.

These are all valuable advantages, as everyone will recognize.

Difficulties and Disadvantages.

The advantages obtainable by general anæsthesia, however, are not wholly unqualified.

To begin with, it is an art. Expertness is not inborn. One does not give it smoothly, safely and perfectly at once after reading a page of instructions. One learns gradually and by intelligent use of personal experience, *plus* the personal tuition of those more adept. Skill and efficiency come only by long practice on patients. Some never become skilful even with long practice. Some do not get sufficient practice. Yet the full value of general anæsthesia is only completely reached when given with perfect art.

There are some further qualifications. In quite a large number of patients and especially in men habituated to alcohol, the induction is very difficult, even with an expert anæsthetist and more still with the inexpert. The patient and his anæsthetist have each a very disagreeable experience and the induction is often very like a fight.

Ether presents a certain amount of danger in some of these cases. And in long and severe operations there is a shock factor of considerable importance inseparable from ether anæsthesia. Ether is generally admitted to be dangerous in badly shocked patients, as after serious accidents, in intestinal obstruction, in hyperthyreoidism and in some other conditions. In some of these conditions gas-oxygen presents a comparatively safe alternative, but it is not generally available and must be given by a specially trained administrator. Crile and Power say that gas-oxygen is the safest of all (general) anæsthetics in the hands of an expert, but perhaps the most unsafe in the hands of the inexperienced. There are cases in which no general anæsthetic at all is given if it can be avoided and as a last resort some sort of local analgesia is induced, either by nerve-block as in spinal analgesia or by employing terminal infiltration. There is no controversy as to the above contraindications to ether.

After etherization the patient usually suffers from nausea and vomiting and headache and is conscious of a good deal of general discomfort, derived not from the operation but from the anæsthetic. The post-operative discomfort varies in amount and in length of period and is influenced both by the quantity of ether used and by the personal factor of the patient. Some administrators (not the real experts) habitually add a sore tongue as their contribution to the post-operative discomfort.

From the side of the patient there is often another qualification. A very large number of people have an instinctive dislike, some have even a horror, of the prospect of the temporary obliteration of personality that is involved in general anæsthesia. And to many it is like a descent into the valley

of the shadow of death. They recoil from it. They are only reconciled to it by fear of pain. Their mental anguish is lightened in part by their trust in surgeon and anæsthetist, but even then they would like an alternative of less complete submergence if it could be offered them with reasonable certainty that they would escape any serious pain. I have a great deal of sympathy for these people and I think we should all try to do what we can to help them. It is more possible than some of us have realized.

Lastly, another criticism of the routine use of general anæsthesia has to be admitted as justifiable. Because the patient is for the time being entirely passive, like mere animated meat, the operator may be tempted to think of him as such. We all know that this type of operator exists. He is not forced to respect tissues as he should and he can insult them without protest. But under local anæsthesia the operator will usually find at once that he is dealing with a person, not with mere meat and he will not be permitted to forget it. He will find that it is advisable to use a light hand, a gentle touch, a minimum of violence, clean, sharp dissection and a keen knife. The anoci-association technique of Crile and Lower is based ultimately on practical experiment and their experimental work remains and must be taken into account, whatever the position of Crile's theory of shock. The implication is that the minimum of injury to the tissues should be inflicted and that tearing, rending, pulling, stretching, scratching, scraping and bruising should give place to what Farr calls "feather-edge" dissecting and gentle handling.

Varieties of Local Anæsthesia.

Terminology.

The inhalation type of anæsthesia being known as "general" anæsthesia, it has become customary to distinguish the rest under the names of "local" and "spinal" anæsthesia or analgesia. The various local types are classified as (i.) "conduction," "regional," or "nerve-block" anæsthesia and (ii.) "terminal" or "local infiltration" anæsthesia. With many writers the term "local" is used in two senses, one generic and inclusive, the other as a contraction for "local infiltration." Braun is clearer and more consistent. He uses the term "local" anæsthesia for the genus and the terms "conduction" anæsthesia and "terminal" anæsthesia for the species. Spinal anæsthesia, although placed for description in a class by itself, belongs logically to the nerve-block group.

In actual work it is usual to combine the various type methods whenever it seems desirable.

In the nerve-block technique the nerve trunks at a distance from the actual seat of operation are brought into contact with a solution of the anæsthetizing drug. Examples are brachial nerve-block, in which the solution is injected around the cords of the brachial plexus above the middle of the clavicle; sacral (or caudal) block, in which an extradural injection is made into the sacral canal through the *hiatus sacralis*; trans-sacral block, in which the injection is made into the lateral foramina of the sacrum and so on. I have done all of these a number of times.

In the local infiltration technique the solution is injected into and about the tissues at the actual seat of operation. It is the easiest to learn and it presents the advantage that the adrenalin injected at the same time stops capillary hæmorrhage. I have done all my hernias with this technique and I use it very largely. For hæmorrhoids it is in my experience more dependable than sacral block, though the latter has been highly praised by Parker Syms.

Narco-Local Anæsthesia.

But at the present time my technique should be called narco-local, whether it be by local infiltration, by regional nerve-block or by subarachnoid spinal injection. But this last would be better called narco-rachianæsthesia.

Morphine and Hyoscine.

The patient is prepared by preliminary hypodermic injection of the narcotics, morphine and hyoscine. The object of this is to allay any feeling of nervousness or fear that may be felt by the patient before or during the operation and to make him feel as comfortable as possible. And as we have seen, it also dulls the memory of the event and often obliterates it altogether. It is a valuable protection against psychic shock. Crile and Lower in their book on "Anoci-Association" put great emphasis on the value of morphine as a preventive of shock, whether psychical or traumatic. In their special technique they used morphine and scopolamine, gas-oxygen and local infiltration of "Novocaine" synergistically as a routine procedure. (Hyoscine and scopolamine are identical.)

The psychical factor is a very important one where pain is concerned. Fear and apprehension enormously magnify the perceptive sensibility and distort the imagination so that the slightest sensation becomes interpreted as pain. True also is the converse, as experience of suggestion treatment shows. The patient should be prepared psychically so as to make him confident. Howbeit, nothing should be neglected that will help, and the preliminary injection of morphine and hyoscine is a very real help. To say that it can be done without is not an argument against it. Let us do every good thing that will help the patient. Most patients will get a morphine injection after the operation, even when a general anæsthetic is used. When local anæsthesia is used, we shall vary it by giving the morphine before the operation. In the synergistic combination of drugs, the hyoscine appears to be the chief agent in producing calm and in obtunding the memory. It is a most valuable addition to morphine, but it is not of much value without it. After receiving morphine-hyoscine the patient is sometimes for a considerable time garrulous rather than sleepy, but he retains no painful impressions, even though at times he has seemed to feel parts of the operation a little.

The beneficial effect of these drugs is so obvious that the question is not whether they should be used, but how much and how long before the operation.

In answer to the questions: "How much?" and "How long before the operation?" it can be said that for an ordinary adult the dose of morphine should not be less than sixteen milligrammes (a quarter of a grain), combined with 0.6 milligramme (one one-hundredth of a grain) of hyoscine injected an hour and a half before the operation. One hour later, that is half an hour before the operation, a second but smaller dose of hyoscine is injected. This second dose of hyoscine should be 0.4 milligramme (one one-hundred and fiftieth of a grain). If the patient is a big man or if he does not seem to have been sufficiently influenced by the first injection, another eight milligrammes (one-eighth of a grain) of morphine may be added to the second dose of hyoscine. Patients over sixty years of age may not need the second dose of hyoscine. The total quantity of hyoscine injected amounts, therefore, to one milligramme (one-sixtieth of a grain) in spaced doses, and the total morphine amounts to either sixteen milligrammes (one-quarter of a grain) or twenty-four milligrammes (three-eighths of a grain).

These doses and times have been arrived at by experience. When I began, I used to give the first injection three-quarters of an hour before operation and the second one just before the patient was wheeled into the operating theatre. Then by trial and error methods, that is by noting effects and working accordingly, the time for giving the first injection was increased to one hour before the operation, then to an hour and a quarter and at last to an hour and a half before the operation. The times for giving the second injection were similarly altered and adjusted by noting results. Ward sisters and resident medical officers all agree that the injection times at present used are much the best, the patient getting now the maximum of benefit from the drugs.

Adrenalin.

At the present time when a local anæsthetic drug is injected, it is customary to inject adrenalin with it. After experimenting for some time with various concentrations of adrenalin, I have adopted a strength of one in one hundred and fifty thousand as a standard, or rather as a maximum concentration and it may be still weaker. That is when natural adrenalin is used. The synthetic preparation is less powerful; it will be satisfactory at a concentration of one in eighty thousand. I have used both. In cases of Graves's disease adrenalin is reduced to a minimum. In such cases Farr uses a concentration of about one in five hundred thousand.

Adrenalin itself is a potent drug capable of causing dangerous symptoms when absorbed in too large a quantity per unit of time. The more concentrated the solution, the more able it is to produce untoward general effects. Overdoses may be avoided by using relatively low concentrations. The limit may be set usually at a total dose of one milligramme which appears to be quite safe. This admits of the injection of one hundred and fifty mils of one in one hundred and fifty thousand concentration. It is in the higher concentrations that the limiting dose has to be carefully looked after. I would not like to inject more than if as much as fifteen mils of a one in fifteen thousand solution, although the absolute quantity of adrenalin in it would be only one milligramme, the same as in one hundred and fifty mils of the weaker solution. On the other hand, I would inject two hundred to two hundred and fifty mils of the more dilute solution if the occasion warranted it. But all injections should be made slowly. Too rapid injection is liable to produce symptoms of adrenalin intoxication.

There are several useful effects procured by the addition of adrenalin. The first is (as already mentioned) that in infiltration anæsthesia it prevents capillary bleeding. The operation becomes a bloodless one. All details can be seen better. Arteries and veins can be seen readily and double-clamped before they are cut. There is a further advantage in that by the infiltration the areolar tissue is distended and separate structures are made easier to pick up and handle. This, for instance, is seen in the spermatic cord when operating for hernia and in the triangles of the neck when removing glands. The bloodless field is an immense gain, but the greatest care must always be taken to secure and tie every vessel. There is, however, no surge of hyperæmia following the disappearance of the bloodless phase, such as occurs after removal of a tourniquet.

The most valuable effect of the adrenalin addition, however, is that it fixes the anæsthetizing drug in the place where it was injected. This procures two secondary effects. Firstly, it greatly prolongs the available period of anæsthesia. The part remains analgesic for an hour and a half or longer. Secondly, it makes it possible to use a very large total quantity of the anæsthetizing drug without producing poisonous effects. That is because by keeping the drug locally fixed for a very long time it slows its absorption into the blood stream. By that means the quantity reaching the general circulation per unit of time is made relatively small and not sufficient to overburden the detoxicating or excretory apparatus. So it comes about that, provided the drug is not injected into a vein, there is almost no limit to the quantity that may be injected in a dilute state into the tissues. Braun says that he has been accustomed to inject from one hundred to two hundred mils of a 0.5% solution of "Novocaine" every day in his practice and that he has repeatedly gone as high as two hundred and fifty mils. The latter quantity contains 1.25 grammes (over nineteen grains) of "Novocaine." But I find that in practice it is only seldom that as much as one hundred mils (three and a half ounces) will be used in any one operation. Adrenalin, therefore, increases the convenience, the scope and the safety of local anæsthesia.

I might add, however, that though it is quite often done, there does not seem to be any very good reason for the addition of adrenalin to a drug that is to be injected into the spinal theca.

Narco-Local Anæsthesia Reviewed.

Since we have reviewed the conditions established in and the advantages and possible disadvantages that are associated with ether anæsthesia, let us note here what we obtain with a narco-local anæsthesia before proceeding to more details.

In the first place, the nightmare of fear and horror with which many patients regard the prospect of a descent into the state of general anæsthesia, is relieved. That this fear is unreasonable does not affect the case, as far as the patient is concerned. It is there. I am sure that with some people the relief is very great indeed.

Furthermore, with proper psychical preparation and with the help of the preliminary narcotic the patient loses his apprehension as to pain. He is calm and confident and he is amenable. Sometimes he is asleep. There is no mental shock.

In the next place, the analgesia is real. He does not feel pain. He does not have pain. He could be made to have it and to feel it by a clumsy, rough and careless operator, but we must assume that the surgeon has taken care to make himself competent to carry out these operations.

Again, the blocking of afferent impulses from the seat of operation tends to abolish traumatic shock. But I would insert a qualification here. The procedure (by whatever technique procured) called splanchnic anæsthesia, leads to a fall of blood-pressure that in my opinion ought frankly to be admitted as to all intents and purposes a shock symptom. The same effect is produced by spinal anæsthesia that is allowed to go high enough to affect the nerves of the dorsal region whence the splanchnics are derived. But apart from this, operation under narco-local anæsthesia is a shockless operation.

As regards the healing of wounds made under local anæsthesia, I have not noticed any difference, except that when infiltration anæsthesia has been used there is rather more tendency to serous exudation. Others have reported to the same effect.

Local anæsthesia is very safe; on the whole, much safer than general anæsthesia, for which it is substituted in many cases on that account. Deaths may occur in connexion with spinal anæsthesia when the action of the drug is allowed to extend too high. So far as I have been able to discover, this is the only form of local or regional anæsthesia with an appreciable death-risk. Some clinics have had many thousands of cases without a death. One hears of others in which trouble and disaster have been relatively frequent. When I say that ordinary local anæsthesia is without an appreciable death risk, I seem to be saying something rash. But I say it with a full knowledge that many deaths have occurred and after reading many of the published case-histories. But after reading thirty or forty case-histories one realizes that what killed the victims was carelessness or ignorance or both in almost every instance. It was not the vagaries of a dangerous and unreliable drug. So perhaps I should say that there is not an appreciable death-risk if proper and reasonable care is taken. We can say exactly the same about digitalis, strychnine, podophyllin, arsenic, thyreoid extract or any other potent drug.

When local anæsthesia is employed there is no need for preliminary fasting, but of course that would not apply to cases in which ether might have to be given at some part of the operation. However, if gas-oxygen is available, that difficulty vanishes.

It does no harm to repeat the statement that the preliminary narcotic dulls and in many cases completely obliterates the memory of the operation. This is often found to be the case even when the patient has been talking and answering questions and has been seemingly rational during the operation.

It is claimed as one of the important advantages of local anæsthesia that by encouraging the habit of gentle manipulation and clean, sharp, "feather-edge" dissecting, it educates the operator to the general benefit of all his patients. All writers insist that this special skill must be attained. Rough-handed operators will not favour local anæsthesia, nor does it favour them, for it uncovers some of their deficiencies.

It is beyond question that as between ether and local anæsthesia, well carried out, the latter is a much more comfortable experience to the patient. Headache and nausea often persist for many hours after ether administration and many patients remember this as a very disagreeable sequel. Vomiting occurs sometimes with narco-local anæsthesia, but it is not troublesome. Headache is said to be not uncommon after spinal anæsthesia. If, however, the comparison is between gas-oxygen and local anæsthesia, the case is different. Gas-oxygen is the pleasantest of all anæsthetics.

As regards muscular relaxation, the relaxation of the muscles in local anæsthesia is very good. For example, in the operation for hæmorrhoids the *sphincter ani* relaxes only under the deepest ether anæsthesia, but it is very readily dilated when local infiltration or trans-sacral nerve-block is employed.

The scope of local anæsthesia is much more restricted than that obtained under general anæsthesia, though it widens considerably with experience. The scope is also greatly widened if light first-stage ether anæsthesia or gas-oxygen can be used for parts of an operation that might cause pain.

The technique of local infiltration is more easily acquired and demands much less accurate knowledge of anatomy than that of nerve-blocking, but while proficiency in the whole scale of nerve-block procedures makes large demands, the important ones

are not very many and not very difficult. In the upper part of the body one will seldom require anything but the brachial plexus block, the finger block and the cervical plexus block. Intercostal nerve block offers little difficulty. Caudal block is generally quite easy. Trans-sacral block through the lateral foramina from behind sounds difficult, but if instructions are carefully followed it is not really so difficult as it seems. But these sacral blocks will seldom be employed for hæmorrhoids because local infiltration at the seat of operation is much more convenient. However, I should mention that there are writers who express a diametrically opposite opinion. They favour caudal block or a combination of caudal and trans-sacral block. Nerve blocking of trunk nerves for operations on the lower extremity offers many problems and the various solutions offered present interesting reading, but do not excite enthusiasm. I am content at present to accept the verdict of Braun and no greater or sounder authority exists than Braun. After a long review of all the many schemes recommended by different men for producing anæsthesia of the whole limb or for the leg only he concludes very briefly by saying that all of the methods are too circumstantial and time-consuming to compete successfully with narcosis (general anæsthesia) and that when it is desired or necessary to avoid general anæsthesia, lumbar (that is, spinal) anæsthesia is to be preferred.

The Special Anæsthetizing Drugs.

The materials thus far discussed, therefore, have included morphine, hyoscine (or scopolamine), adrenalin and as occasional adjuvants, nitrous oxide and oxygen or ether for temporary general anæsthesia.

Now we come to the anæsthetizing drugs themselves. There is a long list of drugs that have been used by various surgeons. I possess real practical experience with only two and I am satisfied from what I have read that though one could be sure of getting good results with several others, none of the others are better. My experience has been confined to cocaine and "Novocaine."

"Novocaine" was originally a German proprietary name. The name is not now a proprietary in England, where it is manufactured by an English company and marketed under its original name as "Novocaine." The drug is said to be official in the German, French, Dutch, Japanese and American pharmacopœias. In the United States it is official under the name of procaine. This name has been found to be a mistake. The similarity of sound has caused fatal accidents through misunderstanding of verbal orders, the more potent cocaine having been supplied in the strength intended for procaine. "Novocaine" is marketed by a Dutch company as "Æthocaine." The French preparation marketed as "Neocaine" is said to be identical with "Novocaine." "Novocaine" is on the Australian market under all these synonyms.

Another drug called "Apothesine," originating in the United States, has become widely used and is well recommended, but I have had no personal experience with it. I have not tried "Apothesine" because, while it is customary to use it in the same strength (0.5%) as "Novocaine," it has been reported to be more toxic than that drug.

Beyond question every anæsthetic drug, general or local, is a poison, the toxicity varying with the dose and mode of application. If they were allowed occasion, any one of them could kill patients. This has been abundantly proved by animal experiment and by accidents in man. Before experience had been gained and specially before the days of adrenalin addition (which we owe to Braun), there were many deaths from cocaine injection. In those days cocaine used to be injected in concentrations as high as 20%. There are still deaths from cocaine, but the case-histories reveal that in the great majority of these the drug has been used in high concentration and usually in contact anæsthesia in tracts lined with mucous membrane. But in this paper I am occupying myself solely with injection methods, not with contact anæsthesia. Cocaine is certainly the most toxic and certainly the most powerful of the analgesic drugs.

Eggleston and Hatcher,[2] using cats and intravenous injections, have attempted to measure the relative toxicity of the drugs mentioned in milligrammes per kilogram. They have placed the drugs as follows: "Novocaine," forty to forty-five milligrammes; "Apothesine," twenty milligrammes; cocaine, fifteen milligrammes. In other words, "Apothesine" was found twice and cocaine three times as toxic as "Novocaine." Others have rated the toxicity of cocaine in relation to "Novocaine" as five to one. "Stovaine" is too irritating for infiltration anæsthesia, but it is said to be about half as toxic as cocaine.

Quinine and urea injection is said to cause analgesia lasting several days, but many cases of sloughing have been attributed to it. It has been recommended for hæmorrhoids operations with the idea of preventing the after-pain which is notoriously so common and so severe after the traditional ligature operation. Surely a better way is to abandon methods of operation that cause after-pain and to adopt a humane method.

The Preparation and Strength of Solutions.

Cocaine is thoroughly effective for local infiltration in a concentration of 0.1% (one in one thousand). I have used the 0.1% solution for local infiltration in a very large number of operations, combined, I should say, with adrenalin. I used it thus for years before experimenting with "Novocaine." I have since adopted "Novocaine" as the standard drug, at least for hospital use. I did not make the change because I had personally any fault to find with the action of cocaine, but because in a teaching hospital one uses for the sake of the students the drug which is most to be advised for general use. The consensus of opinion amongst those who have given careful and prolonged study

to the matter is very strongly in favour of "Novocaine." This opinion should be respected and I do not doubt that it is right.

"Novocaine" is used for infiltration anæsthesia in 0.5% strength (one in two hundred) in normal saline solution containing adrenalin of one in one hundred and fifty thousand concentration. When the contained drugs are at this relatively low degree of concentration, the solution may be used liberally and without fear of overdosage. For nerve blocking one uses a 1.5% or 2% strength of "Novocaine" without increasing the strength of adrenalin.

If cocaine is five times as toxic as "Novocaine," the toxicity of a 0.1% cocaine solution and of a 0.5% "Novocaine" solution ought to be about even.

As regards the sterilization of solutions, it should be said that cocaine solutions cannot be boiled without destruction of the drug. "Novocaine" may be boiled, but apparently it is not wise to boil it very long. "Apothesine" may be boiled repeatedly. Adrenalin must not be boiled; it should always be added after the solution containing the anæsthetic drug has been sterilized. It is possible to preserve solutions in sealed ampoules ready for use, but bulk solutions should be freshly prepared. Solutions made up from powders by a pharmacist should certainly be boiled before using and therefore the pharmacist should not add the adrenalin. This must be added in the operating theatre. On the other hand, the chances are millions to one against the presence of pathogenic microorganisms in tablets of the various drugs, since they are made by machinery without human handling. If cocaine is used for injections, tablets must be used. For making up adrenalin solutions tablets are the best.

For minor operations ready-made solutions in ampoules, concentrated or otherwise, are satisfactory, but for more extensive operations when a relatively large quantity of solution is required, tablet preparations containing measured amounts of the drug are very convenient and for private practice they are by far the most suitable, when they can be had uncompounded. They allow the extemporaneous preparation of any quantity at any desired concentration and the tablets preserve their potency indefinitely.

Tablets containing a combination of cocaine or "Novocaine" would be very convenient if they were adapted for major work. But I do not know of any compounded tablets that are suitable for the surgeon who may require, say, one hundred and fifty mils for one operation. The only compounded tablets made, so far as I am aware, are individually small and contain too much adrenalin to permit of their use for other than small operations. Some small tablets are obtainable so compounded that, if a sufficient number were used, one hundred mils of a solution could be obtained containing half a gramme of "Novocaine" and one milligramme of adrenalin (one in one hundred thousand). But if one desires to make the maximum dose of adrenalin as nearly as may be no more than one milligramme, one must limit oneself to one hundred mils of this solution as the maximum allowable. This will not do. We must be permitted to use our solution as freely as is necessary and yet retain as large a margin of safety as is reasonably possible.

Similarly, I have found no tablets suitable for nerve-block solutions. The same tablets that I have already mentioned will make 2% "Novocaine" solutions only by compelling therewith an adrenalin concentration as high as one in twenty thousand. This debars them from being used to make up nerve-blocking solutions.

It would be a convenience if large tablets were obtainable, suitable for extemporaneous preparation of a large quantity (say one hundred mils) of 0.5% "Novocaine" in adrenalin concentrations of from one in two hundred thousand to one in one hundred and fifty thousand, but no stronger.

Another convenience would be stock tablets in two strengths suited for making nerve-blocking solutions. They should be designed so that one strength would make a 1% solution and the other a 2% solution. Then a mixture of the two could be employed to procure a 1.5% solution. They should each provide an adrenalin concentration of one in one hundred and fifty thousand.

Until the conveniences just mentioned are made available, we should avoid compounded tablets and make up our solutions by other means. Unfortunately, tablets of pure "Novocaine," large or small, do not seem to have reached Australian distributors, though I know that small tablets of pure "Novocaine" are made in England. What I should like are half gramme tablets. Up to the present I have had to depend on the powdered form of the drug.

Cocaine has some decided advantages over "Novocaine" for private practice in this part of the world, because it is readily obtainable in tablets of various size unmixed with adrenalin.

Adrenalin tablets are always available.

For spinal anæsthesia ready-for-use ampoules of "Stovaine" or "Novocaine" are very convenient.

Apparatus and Other Considerations.

As for apparatus, the work can be done with a ten mil "Record" syringe. In the local infiltration technique a fine hypodermic needle will be used throughout in most cases. For nerve-blocking longer needles will be required in addition. Great care must be used, however, with the handling, because there is a tendency for the needles, especially the small ones, to break off at the hub and it is said by Braun that actions for damages have been brought by patients in whom needles have been broken and lost. In the larger sizes an "unbreakable" needle is obtainable that will bend easily without breaking. I have used these with satisfaction. Platinum-iridium needles are too blunt.

The "Record" syringe, however, has one very annoying defect. Whenever there is any consider-

able rise of pressure in the barrel, the syringe blows off the needle at the push-on connexion and the solution spurts all over the place and especially into the eyes of the operator. Special syringes are made with flange or bayonet connexions for the needle that prevent blowing off. Labat's, Leydener's and Gray's patterns are made with needle catches of this sort. I have used Leydener's and Gray's with satisfaction. Both of these have fitments for using Schimmel's needles which have some advantages. Gray's is an all-metal syringe and of greater capacity than the others (thirty mils), though not at all unhandy. Indeed, it is more handy to use than Leydener's which has a capacity of ten mils. It is less likely to suffer damage than the others and its absence of transparency is not found a disadvantage in actual work. I have not used Labat's, but I have seen it and think it is probably the most convenient of all. It has, however, no fitment for Schimmel's needles. Labat's is French, Leydener's German and Gray's English in origin.

Schimmel's needles are usually thrown away after using; other needles should be rinsed through with dilute lysol and then with methylated spirit. The best way to keep needles is to drop them after the washing with spirit into a wide-mouthed jar buffered at the bottom with cotton wool and filled with a 0.5% solution of liquid paraffin in benzine. The syringe should be dipped in the same solution before being put away. The benzine evaporates and leaves a thin film of liquid paraffin on the metal.

As with general anæsthesia, so also with local anæsthesia; it is an art that must be acquired; expertness is not inborn. Some men, however, do not seem to think that limitation applies to them and they talk self-sufficiently as if any defect in their first attempts must be a quality inherent in the system generally and not possibly a quality referable to themselves. I say this because I have seen men attempt to do major work when it was easy to see that they had not troubled much to learn how to do it. Then they shout at their squirming victims, a practice that Farr contemptuously calls "vocal anæsthesia." These patients get a wrong idea of local anæsthesia and, of course, the surgeon himself condemns it. But he did not acquire aseptic technique without taking great pains to learn every small detail and then drilling at it.

Let the beginner begin with minor operations. As a next step let him proceed to hæmorrhoids and small hernias, but only small ones. Then he may try other things and bigger hernias. Spinal anæsthesia does not present many obvious difficulties, but there are very important details that must be attended to to procure safety. Nerve-block procedures should be very carefully studied before they are attempted and the operator must have a good knowledge of the anatomy concerned and carry a good mental picture of it in his head.

Again, it should be remembered that the patient is not unconscious and he should be made as comfortable as possible. The table should be padded with an extra blanket. There should be a pillow for the head. The eyes should be covered before the patient is wheeled into the operating theatre. His or her modesty should not be offended by unnecessary exposure. If, as often happens, the patient complains of dryness of the mouth, a result of the hyoscine, some water may be dropped into his mouth from a wet swab. If the lithotomy position is to be used, the common method of using foot-slings should be discarded and a comfortable, adjustable leg-rest should be added to the equipment of the table. I have had one made which is satisfactory. An assistant should stay by the patient's head to watch him, to report if he winces, to encourage him, to talk to him if he wants to talk and to warn him when a needle is to be inserted.

Let me emphasize again the importance of suitable psychical preparation. This should be cared for notwithstanding the adoption of morphine-hyoscine preparation. If thought desirable, a sufficient dose of barbitone may be given the previous night. It is the duty of the nursing staff to give confidence to the patient by reassuring him in every way. No other kind of nurse should be tolerated.

It is, of course, necessary that the patient should have confidence in the judgement of the surgeon in the choice of an anæsthetic. But this confidence should be well-placed. If a local anæsthetic is advised and the patient is told that he will feel no pain, he must not be let down. He must not be allowed to feel pain. That is a reason for taking pains to learn technique. If the operation is one in which at some stage pain may become prominent, at that stage a general anæsthetic should be given as far as necessary.

If a patient expressly asks for a general anæsthetic in preference to a local, he should be freely allowed to have his choice, provided it can be done with ordinary safety. But if he is merely nervous from ignorance, a little encouraging talk is usually enough to convert him. But (as Farr remarks) the most potent of all arguments is the testimony of a patient in the ward who has had an operation done under local anæsthesia and is pleased. They are easy to get.

Local Anæsthesia Particularly Suitable to Australian Conditions of Practice.

I was encouraged to explore the further possibilities of various types of local anæsthesia partly because the earlier results were so promising that I wished to enlarge my experience, partly because sundry patients desired it and partly because I found the experimental work absorbingly interesting in itself as I broke fresh ground. That was all personal. But I have gradually come to see further reasons for developing this type of work that are not merely personal. I have come to realize that it offers something of special value to a large number of men working under Australian conditions of practice in the country. One thing that has helped to bring this home to me, is the intense interest now taken in it by students. They know by a correct instinct what they want. They look ahead and they perceive that there is something in this form of

procuring analgesia that can be developed into a valuable practical help to them in their work, should it be their lot to practise in a country town where a second practitioner to administer a general anæsthetic may be hard to get and where the patient may be ill able to afford the expense of bringing another man twenty or thirty miles. And in any case, in accidents or other emergencies there might be a delay of many hours. If the technique of the various types of local anæsthesia were well understood, some of these difficulties might be avoided.

Unfortunately, however useful it may be, it is bad policy for the student to spend much time in getting acquainted with it during his course. He is compelled to economize effort. The student's most immediate interest as a student is to pass his examinations and at present he is more likely to get good marks if he can describe how he would deal with an hour-glass stomach or what structures he must be extra careful about when he does a thyreoidectomy, than he would by knowing anything definite about anæsthetizing any particular part of the body.

What would be said if I as an examiner were to ask a student up for his final to give me some definite details about local anæsthesia technique; if I were to require him to describe to me two practical ways in each case of producing a local anæsthesia for a thoracotomy or for an operation on a strangulated hernia or on a lacerated hand; and if I were to mark it severely against him if he could not tell me anything at all about it? It would be considered unfair and unwarrantable not only by students but by other examiners. And as things are at present, they would certainly be right. One has to keep in line.

But if it is something of considerable value, it is something that should be taught, taught adequately and commensurately with its value. Who shall teach it?

But why not drop some of this surgical specialist overburden? We might, I think, make a profitable modification in the so-called "Operative Surgery" course which is not operating nor like it. I find that it is derided by many of our young graduates (who are not fools) and a considerable section of it is regarded as waste of time. I don't think they are likely to be altogether wrong. They are burdened with some useless junk. Why not substitute something they can all use and would all be the better for knowing? But again, who shall teach it?

It seems to me that there is here a good reason for suggesting to the surgical staffs of our Australian teaching hospitals that they should direct a larger amount of practical attention to these types of analgesia in the future than has been customary in the past.

It is with this in view that latterly I have been developing the work and it is with this strong sense of its peculiar usefulness in Australian conditions that I have written this article. I do not pretend to be an advanced exponent of these methods. I am a learner, a student myself amongst students.

Literature.

Excepting for spinal anæsthesia, I can recommend the following two books from personal knowledge. Others are well spoken of, but I am not personally acquainted with them. The first is "Local Anæsthesia," by H. Braun, translated and edited by M. L. Harris, 1924, Second American Edition, 411 pages, published by Kimpton. The second is "Practical Local Anæsthesia," by R. E. Farr, 1923, 529 pages, published by Lea and Febiger. Braun is cautious, judicial and profound in knowledge and experience. It is to him that we owe the introduction of adrenalin into the technique. He gives very full attention to "conduction" anæsthesia and as a book of reference for nerve-blocking work, as well as for general knowledge, Braun's book is indispensable. It is a much greater book than Farr's. Farr believes that while nerve blocking is ideally the better, local infiltration is in practice the more satisfactory. He goes closely into details and can teach. He does most of his work without preliminary morphine and hyoscine and places very great emphasis on psychical preparation. Farr's book is therefore in some respects complementary to Braun's and if only one book is to be bought, that book should be Farr's, because local infiltration is the easier method to learn.

These possessing Volume VIII. of Keen's "Surgery" will find a chapter on "Local Anæsthesia" by M. L. Harris and another on "Subarachnoid (or Spinal) Anæsthesia" by Hugh Cabot. Both of these are very good. Crile and Lower's book on "Anoci-Association" (259 pages, published by Saunders, 1914) is worth reading by anyone interested either in anæsthesia or in operating.

The following articles from periodical literature are all well worth reading. Number 4 is a letter strongly condemnatory of spinal anæsthesia and ice-cold about local anæsthesia. I recommend their perusal to anyone who can get the opportunity.

1. Naguib Mahfouz Bey: "The Routine Use of Spinal Analgesia in Gynæcology," *The Lancet*, 1918, Volume II., page 141.

2. S. R. Meaker: "Conductive Anæsthesia by the Intrasacral Extradural Injection of Novocaine," *The British Medical Journal*, May 10, 1919, Volume II., page 569.

3. A. A. Morrison: "Eleven Thousand Cases of Spinal Analgesia," *The British Medical Journal*, November 5, 1921, Volume II., page 745.

4. C. L. Hewer: "Spinal Analgesia and General Anæsthesia," *The British Medical Journal*, February 18, 1922, Volume I., page 290.

5. G. L. Labat: "Posterior Resection of the Rectum and Recto-Sigmoid (Kraske or Modified) under Regional Anæsthesia," *Johns Hopkins Hospital Bulletin*, 1922, Volume XXXIII., page 134.

6. W. R. Meeker and B. E. Bonar: "Regional Anæsthesia in Gynæcology and Obstetrics," *Surgery, Gynecology and Obstetrics*, 1923, Volume XXXVII., page 816.

7. Report of Committee for the Study of the Toxic Effects of Local Anæsthetics, Emil Mayer, Chairman, *The Journal of the American Medical Association*, 1924, Volume LXXXII., page 876.

8. W. R. Meeker and H. W. Hundling: "Local Anæsthesia in Operations on the Neck," *Surgery, Gynecology and Obstetrics*, 1924, Volume XXXVIII., page 806.

9. A. G. Rytina and H. L. Tolson: "Spinal Anæsthesia," *Annals of Surgery*, 1924, Volume LXXIX., page 283.

10. Parker Syms: "The Radical Cure of Hæmorrhoids by the Clamp and Cautery Method, Emphasizing the

Value of Sacral Anæsthesia," *Surgery Gynecology and Obstetrics*, 1924, Volume XXXIX., page 349.

11. C. H. Carlton: "Regional Anæsthesia," *The British Medical Journal*, 1925, Volume I., page 648.

REFERENCES.

(1) A. J. Hull: "The Cure of Inguinal Hernia," *The British Medical Journal*, October 17, 1917, Volume II., page 548.

(2) C. Eggleston and R. Hatcher: *Journal of Pharmacology and Experimental Therapeutics*, 1919, Volume XIII., page 433, cited by R. E. Farr in his book, "Practical Local Anæsthesia."

NOTES ON MEDICAL POST-GRADUATE WORK IN ENGLAND AND SCOTLAND DURING 1924.[1]

By T. H. R. MATHEWSON, M.B., Ch.B. (Edinburgh),

Honorary Physician, Hospital for Sick Children, Brisbane.

Introductory.

WHEN a medical practitioner settles in London with the object of doing post-graduate work, he is immediately faced with the difficulty of deciding which of the numerous teaching hospitals and schools he is going to attend.

A few years ago the Fellowship of Medicine and Post-Graduate Association was formed for the purpose of assisting those desirous of doing post-graduate work in London. Through the courtesy of the Royal Society of Medicine this association has its offices in the beautiful and commodious home of the society at No. 1, Wimpole Street. By paying a fee to the fellowship, one becomes a member and is entitled to attend special courses arranged by the association, as well as clinics at certain of the well known teaching hospitals. Once a month the association issues a gazette containing a time-table of the clinics which one is entitled to attend.

The Royal Society of Medicine welcomes visitors to its meetings and places its magnificent reading-room and library at their disposal. An "at home" is held once a month when the President of the Royal Society of Medicine, last year Sir Hale White, receives members and visitors. This society does a great work in organizing meetings of the various sections of medicine and surgery at which teachers and others from the various hospitals and medical schools, not only in London, but throughout the British Isles and occasionally the Continent, meet and discuss matters of scientific interest.

The British Medical Association arranges lectures which are delivered by specialists before its various divisions.

Special lectures are delivered periodically before the Royal College of Physicians. A particularly interesting lecture on "Angina Pectoris and the Possibilities of its Surgical Relief" was delivered last May, by Dr. Wenckebach, of Vienna, before a notable gathering presided over by Sir Humphrey Rolleston. Wenckebach paid a tribute to the work of Clifford Allbutt, whose views on the causation of *angina pectoris* are so widely accepted. Clifford Allbutt was in the audience.

Every Australian who goes to London, should see Mr. Milligan, an Australian surgeon, practising in Harley Street. He is Secretary of the Australian and New Zealand Medical Association. Members of this association dine together informally once a month and once or twice a year a dinner is held at the Trocadero. I attended one of these dinners last July when about a hundred men were present. We spent a most enjoyable evening. The speakers included the Prime Minister of New Zealand, Sir Humphrey Rolleston, Sir Hale White, Dr. Strickland Goodall and Dr. S. V. Sewell. Some very good stories were told. Mr. Milligan is always pleased to help visitors by providing them with introductions and in other ways. Several excursions were arranged by the association last summer, one to Gauvain's sanatorium where he carries out his heliotherapy and another to some chemical works.

While in London I met many Australian graduates the majority of whom were from Melbourne and Adelaide.

Diseases of the Nervous System.

The arrangement of the course of study in my own case was determined two days after I reached London, when I called on J. G. Greenfield, Pathologist to the National Hospital for the Paralysed and Epileptic, Queen Square. A two months' course in neurology had just begun at Queen Square and I immediately joined the class. The course consisted of clinical lectures and demonstrations, out-patient clinics, lectures on the anatomy and physiology of the nervous systems, lectures and demonstrations on the pathology of the nervous system and on diseases of the eye in relation to nervous diseases and demonstrations on clinical methods of examination. Almost the whole of each day was taken up by the work. I found it an advantage to take out a hospital ticket which gave me the opportunity of becoming clinical assistant and examining patients for myself. The standard of work and of teaching at Queen Square is very high. It is a delight to listen to men like Risien Russell, Aldren Turner, James Collier, Grainger Stewart, Gordon Holmes, Kinnier Wilson, Percy Sargent and to the younger men Greenfield, Walshe, Adie and Riddoch. There is not a member of the medical staff of the hospital who has not made important contributions to medical science. James Collier's demonstrations on neurological affections at St. George's Hospital every Thursday afternoon are becoming increasingly popular.

During my stay in London I saw examples of almost every described neurological condition. I was struck by the number of cases of *encephalitis lethargica*, acute, subacute and chronic. The number of cases in which the Parkinsonian condition had developed, was remarkable. I have seen as many as half a dozen patients shuffle into the out-patient department during an afternoon. A history

[1] Read at a meeting of the Queensland Branch of the British Medical Association on May 1, 1925.

of fever existing for a few days—influenza as it is often called—insomnia during the night with sometimes occupational delirium, somnolence during the day and diplopia are sufficiently characteristic to enable one to make a diagnosis of *encephalitis lethargica*. One of the characteristic signs on examination is the patient's inability to converge. In one case the first thing the patient noticed was that he had difficulty in lighting his cigar. He did not know when the match was at the end of the cigar. In severe cases the patient is in a state of profound lethargy for a considerable period. Some patients develope myoclonic movements, groups of muscle fibres contracting as though stimulated by faradism. The most distressing sequelæ are the mental changes. An alteration in the patient's disposition occurs. A child who previous to his illness was amiable and well-behaved, becomes irritable, destructive, suffers from outbursts of temper and his management becomes a most serious and difficult problem. The relapses which tend to occur in *encephalitis lethargica* make the question of prognosis a difficult one. Like the spirochæte the virus appears to be capable of remaining dormant in the nervous tissues indefinitely and of manifesting its activity periodically after intervals of apparent good health.

I spent an interesting weekend at Sheffield at the height of an epidemic. Through the courtesy of Professor Arthur Hall, who has recently published a book on *encephalitis lethargica*, I saw a number of patients suffering from the acute form of the disease. Several of the patients exhibited choreiform movements. The treatment of *encephalitis lethargica* at Queen Square is purely symptomatic. Hyoscine hydro-bromide relaxes the rigidity, at least temporarily and improvement in the associated mental condition has been reported to have followed its use in a number of cases.

Apart from syphilis, disseminated sclerosis is the commonest organic disease of the nervous system seen in England, at any rate until *encephalitis lethargica* became epidemic. Recent research suggests that the causative agent is a spirochæte. There is no disease of the nervous system with the exception of syphilis itself that is so protean in its manifestations. Many cases of the disease would be missed if one were to wait for the classical triad of symptoms, namely the intention tremor, the nystagmus and the scanning speech. Text-book types of the disease may be regarded rather as curiosities. If a patient between the ages of sixteen and thirty years comes complaining of weakness in one or both lower limbs and if it can be demonstrated that the weakness is due to disease affecting the pyramidal tracts, and syphilis can be excluded, disseminated sclerosis is already the most likely diagnosis. When in addition there is a history of transient diplopia or blindness, slight or transient motor, sensory or sphincter disturbances, then a diagnosis of disseminated sclerosis is practically certain. There may be remissions in the course of the disease during which the patient may feel perfectly well. It is the variation in degree and distribution of the symptoms which may lead the physician into the mistake of diagnosing the condition as one of hysteria.

A condition which interested me a good deal and of which I saw a number of cases, was subacute combined degeneration of the spinal cord. This is a disease which occurs most commonly in persons between the ages of fifty and sixty. The onset is insidious and the disease steadily progresses towards a fatal termination. The clinical features consist in a combination of sensory and motor phenomena. Loss of sensibility of peculiar distribution occurs which has a "glove and stocking" distribution upon the limbs and a segmental distribution upon the trunk. One of the most interesting features of this disease is its association with Addison's or pernicious anæmia. Those of you who have followed the work of Hurst, of Guy's Hospital, will know the importance he attaches to achlorhydria as a predisposing cause of Addison's anæmia. The achlorhydra is in most cases constitutional and congenital. Achlorhydria occurs also in subacute combined degeneration of the cord. Hurst believes that no definite line can be drawn between Addison's anæmia accompanied by changes in the spinal cord and subacute combined degeneration of the cord accompanied by anæmia. The difference is simply one of degree and depends upon whether a hæmolysin or a neurotoxin is the more active. In other words either the subacute combined degeneration or the anæmia may predominate or both may develope simultaneously.

Idiopathic epilepsy is a common condition seen at Queen Square. Bromide is still regarded as the most useful drug in the treatment of the condition, but it must be taken with absolute regularity over a long period. By means of this treatment complete cessation of fits occurs in about 10% of the cases. "Luminal" is useful in a certain proportion of the cases. There is a popular belief that the administration of bromide is responsible for mental deterioration in cases of epilepsy. It is probable, however, that the fits themselves produce the mental change. Before making a diagnosis of idiopathic epilepsy, particularly in patients in whom the fits develope in adult life, intracranial tumour, syphilis and uræmia must be excluded.

In regard to intracranial tumours I never believed that these were so common, until I visited Queen Square; tumours involving the pituitary body occurred not infrequently. In regard to the treatment of this condition, according to Collier, the regular administration of mercury and iodide should be carried out whatever be the nature of the tumour. "In syphilitic cases a cure may be effected, but such a cure occurs as a rule only in hydrocephalus resulting from syphilitic adhesive meningitis which has produced symptoms simulating tumour. Massive cerebral gummata are not easily removed by antispecific treatment." A decompression operation is undertaken in cases of intracranial tumour when the localization is certain and when the tumour is in such a position that the operation is likely to give

relief. If by good fortune the tumour can be removed, the operation becomes a radical one. An operation may be undertaken as a palliative measure to relieve headache and prevent blindness when no localization is possible. In such cases the surgeon takes the risk of the tumour shifting towards the opening in the skull and producing further damage to the cerebral tissues.

The ophthalmological work at Queen Square is in charge of Mr. Leslie Paton and is very interesting and instructive. Paton examines the *fundi oculi* every Monday afternoon and the visitor is able to see and discuss at length the cases with him. In regard to the question of papillœdema in a series of two hundred cerebral tumours verified either at *post mortem* examination or at operation, Paton found the condition present in 80%. It was thought at one time that when papillœdema was more marked in one eye than another, the tumour was situated on the side corresponding to the affected eye. Paton and Farquhar Buzzard believe that no such relationship exists. Vision may be only slightly impaired in the presence of a considerable degree of papillœdema. Many cases are followed by a varying degree of atrophy of the optic nerve and a greater or less impairment of vision. I saw patients in whom papillœdema had been reduced several diopters by intravenous injection of hypertonic saline solution.

Before finishing what I intend to say about the work at Queen Square, I wish to refer to the subject of Sicard's method of localizing spinal cord lesions, which I saw used by Mr. Percy Sargent. Briefly, Professor Sicard's method is as follows: Between one and two cubic centimetres of "Lipiodol" is injected into the spinal canal through a suboccipital puncture, the patient being in a sitting posture. "Lipiodol" is a heavy oily fluid containing 40% of iodine and is opaque to the X-rays. The "Lipiodol" sinks slowly downwards and is arrested at any point of occlusion of the spinal canal and the upper limit of a tumour or any other lesion producing obstruction can be accurately delineated. The method is of considerable value to the surgeon because it shows him the exact relation of the lesion to the bones. In cases in which no obstruction exists, the "Lipiodol" sinks to the bottom of the thecal sac where it can be demonstrated by X-ray illumination forming a dense triangular shadow. The "Lipiodol" remains for an indefinite period in the thecal sac and is apparently innocuous.

Gastro-Intestinal Disorders.

During my stay in London my time was divided chiefly between Queen Square, the Hospital for Sick Children Great Ormond Street, the National Hospital for Diseases of the Heart and Saint Bartholomew's. I saw something of Maclean's work in connexion with diabetes and renal disorders at Saint Thomas's, Hurst's work on gastro-intestinal conditions at Guy's and Sequeira's dermatological work at the London Hospital. At University College I met McNee who was working on the subject of jaundice. You may have read his paper on the subject published in connexion with last year's annual meetings of the British Medical Association.

Izod Bennett, of Middlesex Hospital, is a keen and most interesting man. His work on the physiology of the upper alimentary tract in relation to the diagnosis of gastric and duodenal disorders is already well known. Bennett has had considerable experience with the fractional method of gastric analysis. As he points out the main impression conveyed by most of the English and American text-books is that in most but not all cases of gastric cancer there is no free hydrochloric acid in the gastric contents and that this condition is similar to what occurs in chronic gastritis, pernicious anæmia and *achylia gastrica*. As the result of his investigations Bennett says that free hydrochloric acid is secreted by the stomach of the majority of the patients suffering from gastric carcinoma and that when a patient with gastric carcinoma has complete achlorhydria the result of the gastric analysis is rarely identical with that obtained in a patient suffering from pernicious anæmia, chronic gastritis or any other benign form of achylia. The detection of early cancer of the stomach becomes possible if steps be taken to make stagnation easily demonstrable. This can be done by giving some finely divided charcoal in milk overnight, two teaspoonfuls in a tumbler of milk. Bennett uses a charcoal biscuit in addition. The fasting stomach is evacuated carefully next morning. This can be done by a Rehfuss tube or some modification of it. Bennett emphasizes the importance of the complete evacuation of the contents of the fasting stomach before the test meal is given.

Bennett divides his cases into three groups: (i.) Those with pyloric obstruction, (ii.) those without pyloric obstruction but with signs of some stagnation, (iii.) those in whom the clinical picture is one of obscure anæmia.

Hæmatology.

I found Piney, of a Charing Cross Pathological Institute, most stimulating. His work on hæmatology has already attracted much attention. He is a young man of unusual ability and has an apt way of putting things. Piney has recently criticized Hurst's views on the ætiology of pernicious anæmia. His hypothesis is that the condition is due to the persistence of embryonic hæmatopoietic tissue, namely the primitive megaloblastic tissue which occurs as foci within the blood capillaries of the liver. Piney has been able to demonstrate this tissue histologically in the liver of patients who have died of pernicious anæmia.

Medical Unit at Saint Bartholomew's.

The unit system of medical education is in operation at the majority of the principal teaching hospitals in London. The medical unit at Saint Bartholomew's Hospital, with the work of which I am best acquainted, consists of the Director, Professor Francis R. Fraser, and two assistant physicians. Acting in conjunction with these are several research workers, the pathologist, the bacteriologist,

the biochemist, the radiologist and other members of the staff of the hospital and medical school. One of the most interesting meetings of the unit is held every Wednesday morning. Visitors from various parts of the world are invited by Professor Fraser to attend his ward visit on that morning. Fraser selects the interesting cases in the ward for discussion. Visitors are called upon to contribute to the discussion and those clinics are among the most instructive that I attended. Fraser is the right man for the position. He has been well trained both as a research worker and as a clinician. He is a comparatively young man, alert mentally and physically. He has a scientific, versatile mind. Fraser has been very kind to Australians.

An old chief of mine, a physician at the Royal Infirmary, Edinburgh, said to me recently that he deplored the fact that the present day methods of medical education were tending to lead the student from the bedside to the laboratory; the examination in the laboratory was tending to supplant rather than supplement the examination at the bedside. One of the most important features of Fraser's work is that he is bringing together the laboratory worker and the clinician. Fraser was experimenting with iodine in cases of exophthalmic goître while I was attending the hospital. His conclusions were that iodine can bring about a lowering of the basal metabolic rate and of the heart rate and an increase of body weight with a striking improvement in the general condition of the patient. The improvement does not as a general rule last. The treatment is useful preparatory to operation.

Post-Graduate Work in Edinburgh.

After I left London I spent an interesting six weeks in Edinburgh. During four weeks of this time I attended a post-graduate course in general medicine. It was a very full course and included lectures and demonstrations on diseases of the various systems, infectious diseases, diseases of children, venereal diseases, medical anatomy, laboratory methods, radiology, morbid anatomy, comparative pathology and genetics in relation to medicine. During the course lectures were delivered on special subjects. Sir Byrom Bramwell gave a most instructive and entertaining lecture on "Errors in Diagnosis." Other lecturers included Professor Lorraine Smith, Professor Mackie, Professor Lovell Gulland, Professor Meakins and Dr. John Thomson.

I was particularly interested in a large diabetic out-patient clinic at the Royal Infirmary in charge of Professor Meakins and Dr. Murray Lyon. Working under them is a sister dietician, who is responsible for arranging the diets, educating the patients and injecting the "Insulin" in patients for whom it has been prescribed. I am sorry that time will not permit of my going into this work in detail.

Diseases of Children.

In regard to children's work I am going to confine my remarks almost entirely to my experience at the Children's Hospital in Glasgow, where I spent between two and three months with Leonard Findlay. I attended many interesting clinics and lectures at Great Ormond Street, but the opportunities for post-graduate work in diseases of children are far greater in Glasgow than at Great Ormond Street. Leonard Findlay has been appointed Professor of Pædiatrics in Glasgow University and he is Physician-in-chief to the Children's Hospital.

The Children's Hospital in Glasgow contains about one hundred and thirty beds on the medical side and a corresponding number on the surgical side. In addition to an out-patients' department at the hospital there is a dispensary in the city for the convenience of mothers. The medical staff comprises Leonard Findlay, who practically controls the medical side of the hospital, four assistant physicians, a pathologist, a radiologist who is also medical superintendent, about half a dozen research workers and the resident medical officers. All patients are admitted to receiving rooms off the main wards, each receiving room having accommodation for about four patients. The children remain in these rooms for twenty-four hours or longer according to the number of those admitted. The history of each patient is carefully taken and the usual examination made before his admission to hospital. A complete record of the child's condition on examination is made within a few hours after his admission. Each assistant physician has charge of a ward or part of a ward and attends each morning. He examines first the newly admitted patients and makes a summary of the result at the back of each case sheet. By this means the observations made by the resident medical officer are checked by a more experienced observer. Findlay attends the hospital every morning from about nine o'clock until one o'clock. On three days a week he makes a detailed visit of each ward in company with the assistant physician in charge, the clinical assistants and research workers. These ward visits are occasions to remember. Findlay is a man of striking appearance, an indefatigable worker and a stimulating teacher. He is always pleased to discuss cases and he will go to no end of trouble in turning up records. His own case records are very complete and constitute in themselves a text-book on diseases of children. Findlay very generously places these records at the disposal of post-graduate workers. Every Thursday morning the whole of the medical staff meets and discusses cases of special interest. On Sunday morning the staff meets again and discusses the cases of patients who have been discharged and who have died during the week. The conclusions are noted and the case sheets filed.

There is a room in the hospital which is specially fitted out for the study of metabolism in infants by the determination of the respiratory exchange. Dr. G. B. Fleming, Findlay's first assistant, is in charge of this work. The respiratory exchange is determined by means of a Benedict-Talbot apparatus. It is important to know the approximate caloric requirements of an infant, for this enables the

physician to calculate the amount of food the patient should receive. Fleming and the late H. S. Hutchison made investigations into the metabolism of the undernourished infant. They were able to show that in marasmus there was no evidence of defective absorption of food and no abnormality in the oxidation of food after absorption. They came to the conclusion that in a certain proportion of cases marasmus was due to undernutrition; in other words the quantity of food taken was not sufficient. In other cases marasmus appeared to be due to gastro-intestinal disturbance as the result of excessive carbo-hydrate feeding. There are other conditions said to be rare, in which there appears to be no gastro-intestinal upset; in these an adequate diet is given and yet the child does not thrive.

In regard to the condition of pyloric stenosis, Findlay is not as enthusiastic in regard to surgical treatment as are most pædiatricians. At Great Ormond Street and other children's hospitals the condition is regarded as a surgical emergency. Findlay has been making comparisons by treating the patients in one ward medically and in another ward surgically. He is in favour of operation when the child comes under observation soon after the onset of symptoms. He hesitates about advising operation for patients who have been allowed to get into a condition of malnutrition. In addition to the usual gastric lavage in patients treated medically, Findlay practises repeat feeding, that is to say that when a child vomits a feed, he repeats the feeding immediately. The food taken at the second feeding is very often retained.

Rickets, as you know, is one of the commonest diseases seen among children in Glasgow. Findlay will not make a diagnosis of rickets in the absence of either naked eye or X-ray changes in the bones. Its ætiology is still under discussion. Rickets has a distribution which coincides with the centres of industrialism. It presents an evident seasonal incidence, being more prevalent in winter than in summer. As far as Europe and America are concerned rickets is a disease of the poor. Investigations have been made into the effect of diet, muscular exercise, fresh air and sunshine on the disease. The undoubted prophylactic effect of cod liver oil suggests that some constituent of the oil is important, but failure to cure the disease even by large doses of the oil is against the idea that rickets is a pure deficiency disease. In this respect rickets does not behave like other deficiency diseases, like scurvy and beri-beri. The ætiology of rickets seems to be associated in some way with confinement, whether this is due to want of fresh air, lack of exercise, absence of sunlight or because confinement, overcrowding and bad hygiene favour the development of some virus, it seems at present impossible to say. In Glasgow children with rickety deformities are not splinted, but are allowed to run about.

One of the most important pieces of work which Findlay has carried out is that in connexion with congenital syphilis. He is of the opinion that the subject of congenital syphilis has within recent years acquired an undue importance. False ideas have been current regarding its frequency and the part it plays in infantile mortality and disease. "The importance of congenital syphilis," Findlay remarks, "lies not in its frequency, but in the fact that we have means for its almost complete eradicaiton." Glasgow earned for itself the reputation of being one of the most syphilized cities in Britain; 10% of the infant and child population was said to be affected with the disease. While Findlay believes that a Wassermann reaction is the most delicate and reliable test we possess for determining the presence of congenital syphilis, he points out that a Wassermann reaction in the new-born is no proof that the child is syphilitic. The antibodies may pass from the mother to the infant, but unless spirochætes are present and fresh antibodies are being formed, the antibodies which emanated from the mother, will be eliminated gradually and the child's serum will ultimately fail to react. Findlay has observed patients whose serum gave a reaction during the first month of life and in the course of a few weeks lost this power without the the development of any clinical manifestations of the disease. On the other hand there are those children, probably few in number, whose serum does not react at birth and developes the power to react weakly later, cases of so-called *syphilis tarda*.

During the last eighteen months every patient admitted to the medical department of the Children's Hospital has been submitted to the Wassermann test. Recognizing that the patients in this institution came from the poorest section of the community, a Wassermann test was made during the same period on all patients with scarlet fever admitted to two wards of the Isolation Hospital. These patients came from various sections of the community. After a consideration of the results of these examinations, Findlay comes to the conclusion that in Glasgow something under 1% of the infant and child population is infected with the *Sphirochæta pallida*.

Findlay regards the treatment of the congenitally syphilitic child a failure. The results in these cases are in contrast to the prophylactic method of treatment, that is to say the treatment of the pregnant mother. Fifty pregnant syphilitic mothers treated at the venereal clinic of the hospital gave birth to healthy children with three exceptions. In one case in which the child was definitely syphilitic, the mother had been under treatment only during the last two weeks of pregnancy. In the other two cases the children were stillborn as the result of difficult labours. A healthy non-syphilitic child may be born even though the mother's serum continues to yield a positive Wassermann reaction. Findlay is inclined to agree with Neisser who taught that the fœtus is infected when syphilitic foci are present in the fœtal and maternal decidua. On account of the extreme vascularity of these tissues the spirochæticidal drugs find easy access to them. It would seem that the

fœtus is not infected if the disease is eradicated from these tissues. A syphilitic focus locked up by fibrous tissue in the body of the mother may be of no real danger to the fœtus. The antibodies manufactured in this focus, however, may cause the mother's serum to react to the Wassermann test.

In reference to the rheumatic infection in children, Findlay regards salicylate as a specific in the treatment of acute rheumatism. Chorea being regarded as a rheumatic manifestation, he pushes the salicylate in the treatment of this disease. As far as his investigations go he finds that children with chorea treated by sodium salicylate have a lower incidence of cardiac involvement subsequently than those treated by arsenic, sedatives or rest alone. Findlay draws attention to the greater tendency to the development of cardiac conditions after chorea than after arthritis. The disablement which may follow an attack of chorea owing to cardiac disease, was impressed upon me on more than one occasion. A case that comes to my mind is that of a boy aged about eight years, who came to the National Hospital for Diseases of the Heart, suffering from extensive cardiac damage. His mother gave the history that he had had a mild attack of St. Vitus's dance two years previously. The doctor who saw him, advised the mother to rest the boy for a week or so, after which he was allowed to return to school.

In connexion with the Children's Hospital at Glasgow, there is an out-patient cardiac clinic for convalescent patients. The progress of these patients is systematically followed up. Many of the children attend a special school, to which they are conveyed by the school board ambulance. At this school facilities are provided for periods of rest and appropriate games are organized.

Diseases of the Heart.

In regard to the work at the National Hospital for Diseases of the Heart I found Strickland Goodall a most stimulating teacher. Goodall is an old Queenslander and he is very good to Australians. He is one of a number of Australians who have made names for themselves in the practice of their profession in London. Nothing pleases Goodall more than to have three or four keen men about him. Goodall was lecturer in physiology at the Middlesex Hospital and he approaches every case from a physiological standpoint. He does not merely give names to conditions seen in patients, but he gives his listeners a mental picture of the process which is going on in the patient and he is able to trace the history of its development in a most interesting and instructive manner. He sees points of interest and importance which the ordinary man misses. I feel about Goodall that all he says is based on careful observations made in a very large cardiological practice. Every patient is systematically examined by ordinary physical examination, by electrocardiography and in many cases by radiography. Anybody who attends Goodall's clinics will become familiar with the words "examine the patient standing, lying down and after exercise;" the student very soon learns to appreciate the value of this advice. The intensity of a murmur may be increased or diminished after exercise. A murmur which is intense while the patient is standing, may disappear when he lies down. All these changes have a special significance. For example, a murmur due to a pericardial rib tends to disappear when the patient lies down, but is intensified by exercise. Exercise increases the murmur of mitral stenosis, but may cause a murmur due to atonicity of the cardiac muscle to disappear.

Goodall's views on the premature contraction and its significance are worth repeating. "All premature contractions," he says, "indicate a hyperirritable condition of the myocardium. The hyperirritability depends on many causes, some of which are serious and intracardial in origin. Others are extracardial and may be of comparatively little importance. The commonest extracardial cause of myocardial hyperirritability is pressure. This is well illustrated in cases arising in late pregnancy, in disturbances of the stomach and the like. The commonest intracardial causes of hyperirritability are four: (i.) degeneration, (ii.) inflammation, (iii.) toxæmia, (iv.) exhaustion.

"The cases due to degeneration occur usually in persons over fifty years of age as part of a generalized cardio-vascular change. The inflammatory cases are those associated with rheumatic fever and syphilis. The development of extrasystoles means that the inflammation, beginning probably in the endocardium or pericardium, has involved the myocardium." The toxic cases are represented by those following influenza, malaria, typhoid fever, excessive tobacco smoking, exophthalmic goître. In continued administration of digitalis in full doses coupled beats occur, the first being a normal beat, the second due usually to a right ventricular extrasystole. Some persons are particularly susceptible to the influence of tobacco. Cases due to this cause formed a proportion of the cases of "disordered action of the heart" seen by Goodall during the war. Some cases of this condition were due to myocardial degeneration. The relationship between extrasystoles and fatigue seems especially interesting, as the premature contractions may be associated with either a general physical exhaustion or they may occur after actual physical effort or be associated with either generalized or local myocardial exhaustion. For example, in mitral stenosis there may be fatigue of the right ventricle or left auricle apart from physical effort and the expression of the fatigue will be either right ventricular or left auricular extrasystoles. Goodall is of the opinion that extrasystoles which appear or increase after physical effort, indicate myocardial fatigue or damage and that any irregularity of the heart which developes after exercise, whether due to extrasystoles, auricular fibrillation or auricular flutter, must always be looked upon as serious and indicative of some myocardial change. He regards the appearance of auricular extrasystoles in a case of mitral stenosis as a danger signal of the approach

of auricular fibrillation. Apart from the risk associated with an underlying myocardial degeneration, an extrasystole may be a danger in itself especially in an elderly person with degenerated vessels. If an extrasystole occurs at the end of diastole when the ventricle is full, the sudden contraction causes a sudden rise in blood pressure and cerebral hæmorrhage may result.

My time has expired. References to some important branches of medical work must inevitably be omitted.

If I am able to supplement what I have said in replying to questions, I shall be happy to do so.

Reviews.

A CLINICAL STUDY OF PERNICIOUS AND APLASTIC ANÆMIAS.

ALTHOUGH an immense literature has accumulated during the last twenty or thirty years on the subject of the "primary" anæmias (pernicious and aplastic), the bulk of it has been devoted to a discussion of their still undetermined ætiology. Consequently, a plain statement of the clinical and pathological conditions observed in a group of cases, together with their interpretation in the light of modern knowledge of hæmatology should be welcome.

"A Contribution to the Study of Pernicious Anæmia and Aplastic Anæmia," by Arthur Sheard, M.D., was the thesis for which the author was awarded the degree of doctor of medicine with distinction, by the University of Leeds.[1]

In this monograph is presented a study of fifteen consecutive cases of pernicious anæmia, one of acquired hæmolytic jaundice and one of aplastic anæmia.

Dr. Sheard has made a very complete study of each case and his observations are set out clearly. His description of the peculiar distribution of the hyperplastic bone marrow in a fatal case of pernicious anæmia which was examined *post mortem* is particularly interesting.

In regard to ætiology, he believes that pernicious anæmia occurs in persons already achlorhydric owing to the action of a hæmolysin and that this hæmolysin is generated in the alimentary canal by an infective agent. This agent is also credited with a noxious influence on the spinal cord, thus causing the subacute combined degeneration so often found associated with Addison's anæmia. It seems that these conclusions as indeed all others concerned with the cause of pernicious anæmia, are hypothetical to a degree beyond that which the evidence permits. But, nevertheless, they embody and combine the teachings of Hunter and Hurst whose views on the subject seem to command the greatest adherence at present.

The tendency towards partial recovery and relapse in two or more definite cycles which forms so remarkable a feature of this disease and also to a lesser degree of the chronic leuchæmias, is not discussed at any length.

On the whole the book is an interesting one; clear, concise and pleasantly written. The cases are well presented; while the reasoned study of them which forms the first fifty-three pages and contains a short historical summary of pernicious and aplastic anæmias, sets forth very well the present knowledge on these subjects. In respect to aplastic anæmia, the author regards this malady as "a pathological syndrome," rather than a disease *sui generis*.

There is a good bibliography.

[1] "Pernicious Anæmia and Aplastic Anæmia," by Arthur Sheard, M.D.; 1924. Bristol: John Wright and Sons, Limited. Royal 8vo., pp. vii. + 94. Price 7s. net.

ESSENTIALS OF PSYCHIATRY.

IN his "Manual of Psychiatry" Dr. Paul E. Bowers has written a reference handbook designed to serve the purposes of the student and the general practitioner.[1] Accordingly essentials only have been dealt with, but it is doubtful if the student will altogether appreciate this, as in his initial excursions into the domain of mental disease, the beginner unless he can afford several volumes would prefer interesting discursiveness to matter of fact brevity. Little is said of normal psychology. There is an absence of illustrations and there are but few diagrams. Nevertheless the book has merit, it is dogmatic and does not make too frequent excursions in the realm of theory. The psychological and organic view points are well balanced and the need for making a complete examination of the patient is stressed. There are several valuable tables, such as the classification of mental diseases outlined by the American Pychiatric Association and another on causation.

One of the best chapters concerns psychoses with constitutional inferiority, in which the psychopath is pigeonholed in an easily remembered fashion. The author appears to have a leaning for criminology and the relationship of insanity to crime is discussed at some length. It is curious that nothing is said of testamentary capacity, a subject of some importance.

More might have been written as to details of treatment, sleeplessness in mental cases often requires heroic doses of hypnotics, but no mention is made of limits of safety. A similar omission is found in regard to several of the drugs exhibited in cerebral syphilis and other diseases. Full details of the technique for taking cerebro-spinal fluid and of simple chemical tests might have been added for the benefit of those who are at a distance from a pathologist.

One of the most important aspects of psychiatry for both the student and the practitioner is concerned with certification and of necessity a book written for an American audience can hardly be expected to provide information as to Australian procedure. This will unavoidably detract from its utility unless the purchaser possesses other sources of knowledge.

AN ENCYCLOPÆDIA OF MEDICINE.

THE final volume (No. XIII.) of the "Encyclopædia Medica" comprises headings from "Tularæmia" to "Zinc" and concludes with a supplement containing two articles, one on treatment of *diabetes mellitus* and the other on respiration.[2] One of the earliest articles is that on typhoid fever, occupying thirty-three pages. Typhus has twelve pages and undulant fever eleven pages. Diseases of the urethra occupy twenty pages. Urine has sixty-two pages. There are five articles, each by a different author, on the subject of "Uterus," the whole occupying one hundred and two pages. Vaccines have twenty-six pages; the vagina has twenty-two, visceral pain twenty-three and vital statistics twelve pages. The subject of vitamins is discussed in a short two and a half pages. Wounds and projectile injuries occupy twenty-two pages. X-rays and radium are given seventy-five pages and twenty-four plates.

The promoters of this great enterprise are to be congratulated on the completion of the last volume. They have surmounted prodigious difficulties, for the Great War intervened during its progress and upset all calculations. The "Encyclopædia Medica" is a very fine work of reference.

[1] "Manual of Psychiatry for the Medical Student and General Practitioner," by Paul E. Bowers, M.D.; 1924. London: W. B. Saunders Company. Demy 8vo., pp. 365. Price: $3.50.

[2] "Encyclopædia Medica," under the General Editorship of the late J. W. Ballantyne, M.D., C.M., F.R.C.P.E. (Volumes I. to VIII.) and Alexander Goodall, M.D., F.R.C.P.E. (Volumes IX. to XIII.); Second Edition. Volume XIII.; Tularæmia to Zinc; Supplement; 1925. Edinburgh: W. Green & Son, Limited; Sydney: Butterworth & Company (Australia), Limited. Royal 8vo., pp. vii. + 671, with illustrations.

The Medical Journal of Australia

SATURDAY, JULY 11, 1925.

The Aetiology and Incidence of Leprosy.

In Australia leprosy is regarded as a rare tragedy, a disease of the Chinese which runs a prolonged course and ends fatally save in a few instances when treatment by means of the gynocardate of soda, the esters of the fatty oils of hydnocarpus and chaulmoogra oils assists Nature in arresting the process. Little is written at the present time about this disease and the greater part of that little is buried in the official reports of the Public Health Departments. A third of a century ago it was recognized that the disease was endemic in Australia. Today the majority of the inmates of the leper lazarets have acquired their infections in China, India and other parts of the east. Notwithstanding this leprosy is still endemic and should be remembered by all who are called on to diagnose skin and nerve lesions. Until very recently it was taught that although leprosy is generally incurable and fatal, it is at times susceptible of complete arrest. It is strange that Hansen who discovered the *Bacillus lepræ* in 1874, insisted that spontaneous cure occurred from time to time, while later dermatologists like Radcliffe Crocker expressed doubt whether the disease was ever anything but fatal. Hutchinson, an astute observer and admirable clinician, was never reconciled to the view that it was essentially an infective process and believed firmly that it arose from the eating of unsound fish. Although this view has long since been discarded as quite untenable, it is necessary to refer to it, for evidence has been accumulated to prove that the bacillus of Hansen may invade the human body without producing the usual signs of leprosy and that mild infections are common in countries where the disease is endemic. Moreover, it seems that spontaneous cure is very common and that death from the disease itself almost a rarity. Dr. E. Muir, a skilled investigator and expert working in Calcutta, has put forward the thesis that leprosy is a self-healing disease. His arguments and evidence in favour of this doctrine are ingenious and convincing. According to his experience the ordinary well nourished individual is immune to leprosy. Invasion by the bacillus is usually followed by a short struggle between the invader and the host with victory for the latter. If the host is undernourished, debilitated by other infective processes, especially syphilis, hookworm disease or chronic intestinal disorders, or is exposed to tropical influences and takes no exercise, his resistance may become lowered and the clinical signs of the disease will be manifested. Pregnancy may also lessen the natural immunity to leprosy. In the early stages the patient suffers from a purely local disease. Should the predisposing cause be removed and the resistance be raised to the normal level, cure occurs spontaneously. But as long as the enfeebling elements persist, the process is progressive; no acquired immunity appears at this stage. Later when the myriads of bacilli have lived their lives in the skin nodules or nerve lesions and have become disintegrated and the disintegration products have been absorbed, antibody production takes place and a gradually increasing immunity developes. The patient who has been for years confined in a lazaret, carries in his body the signs of extensive leprous lesions, but the infection has died out. Years of debility, prolonged exhaustion caused by the destructive effect of the bacilli on his skin and nervous tissue, the effect of his deplorable social ostracism and incarceration with all that it means to the victim, the lack of incentive to take active exercise and many other results of his original disease render him peculiarly susceptible to intercurrent affections which are the more serious in view of his small general bodily strength. Dr. Muir claims that even at a relatively late stage, if the patient is fed up, if he is induced to follow an active calling and if the predisposing cause is removed, cure may be effected, although the deformities may not be removable. He teaches that the first stage consists of a primary nerve lesion; next there is the primary skin lesion; the second stage of the skin type is characterized by an increase in the number

of bacilli in the lepra cells; the third stage is associated with a generalized infiltration with enormous numbers of bacilli.

Twenty-nine years ago Dr. G. H. Taylor, then Medical Superintendent of the Coast Hospital, New South Wales, carried out a systematic investigation of the patients in the general wards of the hospital and discovered that thickening and tenderness of the ulnar and peroneal nerves and slight anæsthesia of the parts supplied by these thickened nerves, were not uncommon. Three patients were shown after death to have had leprous nerve lesions, although the signs of leprosy during life were so slight that no one without an intimate knowledge of the disease and a very keen power of observation would have recognized it. A little later he established the diagnosis of leprosy immediately prior to death from pleurisy in a man who had been examined by many competent clinicians without any suspicion of leprosy having been raised. Dr. Taylor had kept this man under observation for some time on account of certain slight signs which he regarded as suspicious. This early recognition of leprous lesions suggested to him that there might be many persons suffering from early and mild leprosy in Government asylums and other institutions where enfeebled and debilitated men and women are housed and kept without active exercise. Unfortunately his enthusiasm was misunderstood and he was challenged for having neglected to notify the infection to the Department. It is unnecessary to revive the story or to recite the details which led to a severe censure. Dr. Taylor justified his action on the ground that while he suspected a leprous infection, he was unable at the time to prove it and further that as the lesion affected the nerves and to a very slight extent the skin, the patient was not a menace to those in contact with him. Twenty-nine years have elapsed and now we have abundant confirmation that his view was correct. Dr. Muir has demonstrated that many persons harbour Hansen's bacillus without manifesting leprous lesions, that others have slight lesions from which they recover spontaneously and that many others have very mild lesions which remain unrecognized for years. The lesson to be drawn from this incident is that in all countries where leprosy is endemic, medical practitioners should render themselves familiar with the signs of leprosy and think of this disease whenever they encounter debilitated persons with obscure nerve tenderness, pains in the limbs and slight anæsthesia. Dr. Taylor has shown us that intimate knowledge of this disease and trained observation may lead to a shrewd suspicion of the true nature of the lesions.

Current Comment.

PRIMARY PNEUMOCOCCAL PERITONITIS.

THE pathogenesis of primary pneumococcal peritonitis has not been accurately determined. Divergent views are held by different observers. According to some the peritoneal infection is hæmatogenous. According to another school of thought the infecting organism traverses the intestinal wall from the lumen of the gut. The third view, put forward most strongly by McCartney, is that the infection is caused by the passage of virulent microorganisms from the external genitals by way of the uterus and Fallopian tubes to the peritoneal cavity. McCartney's views were discussed at some length in this journal in the issue of March 1, 1924. McCartney holds that primary pneumococcal peritonitis occurs exclusively in young girls between the ages of three and seven. He points out that the patients belong to the poorer classes who are as a rule not well cared for. The patients frequently wear few if any underclothes, their perineal regions are generally dirty and they are more likely to sit about in unclean places. In this way according to McCartney vulvo-vaginitis may arise and infection occur by upward extension. McCartney supported his views by interesting and important experimental evidence which need not be reviewed again in this place. In discussing McCartney's work we pointed out that many observers have claimed that primary pneumococcal peritonitis occurs in boys and we suggested that it is not beyond the range of possibility that there exists a portal of entry, as yet undiscovered, which occasions a general septicæmic infection and that the presence of organisms in the vaginal secretions, throat and other parts, may be the result of this. It is as reasonable to adopt this assumption as it is to assume on the evidence offered that infection invariably reaches the perineal cavity from the vagina.

Primary pneumococcal peritonitis was discussed recently at a meeting of the Royal Society of Medicine.[1] Most of the speakers confined their remarks to treatment of the condition, but some concerned themselves with pathogenesis. Dr. H. C. Cameron said that he had twice met with the condition in

[1] *Proceedings of the Royal Society of Medicine*, May, 1925.

boys, aged respectively four and six years. He also pointed out that in a minority of instances the history of the onset afforded some support to the view that the peritoneum was reached by an extension from a preceding enteritis or colitis.

Dr. D. Nabarro pointed out that it was not widely enough known or appreciated that certain strains of the intestinal streptococci (*Streptococcus fæcalis* or enterococci) closely resemble pneumococci both morphologically and in their action upon sugar. He said that they might even be surrounded by a halo or capsule. For this reason diagnosis was difficult. He expressed the opinion that some of the suppurative peritoneal conditions diagnosed in London hospitals as pneumococcal were really enterococcal in nature. In regard to the method by which the infecting organism reaches the peritoneum, Dr. Nabarro is inclined to accept McCartney's views. He points out that there are several weighty arguments against infection by the hæmal route, one being that in many cases of pneumonia pneumococci can be demonstrated in the blood and that peritonitis is a rare complication of pneumonia.

Dr. E. Bellingham Smith asked whether it was possible to mistake the pus of enterococci or streptococci for the pus of the pneumococcus. In all cases described by him the pus had appeared typical of pneumococcal peritonitis. It had been greenish, faintly sweet smelling and not foul. Dr. Nabarro in reply said that streptococcal pus might not have any objectionable odour. Dr. Bellingham Smith laid stress on the preliminary symptom of diarrhœa; it was something more than merely one or two loose stools. He regarded it as a pathognomonic sign of the disease. This was of importance for he considered that in primary pneumococcal peritonitis the bowel occupied the same position to the peritoneum as the lung to the pleura in pneumonia. He held that many if not all cases of primary pneumococcal peritonitis began as a pneumococcal enteritis.

Two important points arise for consideration on reading this discussion. In the first place in dealing with the pathogenesis diagnosis must be established beyond any doubt. If it can be proved that pneumococcal peritonitis of a primary nature occurs in boys and that the infecting organism is not the *Streptococcus fæcalis*, McCartney's view of the genital tract being the sole port of entry is obviously untenable. It is, of course, possible that one or more paths may be open to the pneumococcus. Dr. Bellingham Smith's analogy between bowel and peritoneum on the one hand and lung and pleura on the other, is suggestive. For this analogy to hold good it must be shown that bacteria can penetrate the wall of the intestinal canal. This has been denied by eminent authorities. In this connexion, however, some recent work by Dr. W. Heneage Ogilvie is of interest.[1]

In the course of investigation on the infections of the alimentary tract Dr. Ogilvie carried out a series of observations with the duodenal tube on several students and on himself. From five of six students and from himself streptococci were recovered. Duodenal puncture was then carried out in seven patients who were undergoing abdominal operation of a mechanical nature. Staphylococci and colon bacilli were recovered in several instances, but no streptococci were found. Dr. Ogilvie states that this is in accordance with the observations of Cushing and Livingood that the intestinal tract when empty tends to become amicrobic and of Knott that the streptococcus is more easily killed by an acid medium than either the staphylococcus or the *Bacillus coli communis*. He points out that the duodenal tube may cause contamination and it must be remembered that the conditions of the experiments are not those which obtain in every day life. This is specially true of the experiments made on himself, for the duodenal tube was on two occasions allowed to remain in position for twenty hours. In another series of experiments Dr. Ogilvie excluded an ileo-caecal loop of bowel and injected into it an emulsion of hæmolytic streptococci. In the nearest group of lymphatic glands scarlet patches of subperitoneal hæmorrhage were found. Cultures were taken from the heart blood, the thoracic duct, the main collecting lymphatic channels and the mesenteric glands. In one of two animals both the thoracic duct and the collecting duct furnished hæmolytic streptococci and no other organism. Two further experiments were carried out; streptococci were injected into the lumen of the jejunum in one instance and into the duodenum in the other. No occlusion of the bowel was carried out. In one animal cultures from the thoracic duct and glands proved to be sterile, but patches of hæmorrhage were found in the first group of glands. In the second animal streptococci were grown from the ileal, colonic and ileo-caecal groups of glands. These were not proved to be hæmolytic. Dr. Ogilvie concluded that in spite of a general belief to the contrary bacteria may be absorbed from the intact alimentary canal. He mentions specifically that Williamson and Brown, working at the Mayo Clinic, have denied the possibility of this absorption.

If Dr. Ogilvie's findings can be confirmed, important possibilities will become evident. When pneumococci multiply in the intestinal canal and an enteritis results, a lesion must necessarily be produced in the mucosa. According to Dr. Ogilvie's findings it is quite easy to understand that penetration of the submucous and muscular layers of the gut by pneumococci might occur. Involvement of the peritoneum either by direct spread or through the agency of the lymphatic system would possibly follow. Theoretically it is possible for the pneumococcus to pass through the gut wall without producing any lesion. More work must be done, however, before the pathogenesis of primary pneumococcal peritonitis can be accurately determined. Moreover, in consideration of the whole problem the question naturally arises as to whether there is such a thing as primary pneumococcal peritonitis; if the condition follows either a vulvovaginitis or a pneumococcal enteritis or a lesion at any portal of entry, it is secondary and not primary.

[1] *The British Journal of Surgery*, April, 1925.

Abstracts from Current Medical Literature.

MORBID ANATOMY.

Congenital Displacements of the Kidney.

L. F. HUFFMAN (*The Journal of Urology*, October, 1924) in reporting several examples of congenital displacements in the kidney says that a consideration of the embryology is necessary in order to understand the various anomalies that may occur. In embryos of five millimetres length there will be seen a protrusion or budding from the lower extremity of the Wolffian duct, just as it bends forward to join the cloaca. This is called the ureter bud. It grows dorsally and then in a cephalic direction in the mesenchyme and comes in contact with the tissue of the nephrogenic cord called the metanephrogenic cap. From the ureter bud will be developed the ureter, kidney pelvis and collecting tubules of the kidney. From the metanephrogenic cap will be developed the Malphigian corpuscles and convoluted tubules. Division of the ureter bud, that is, of the part which may be termed the primitive renal pelvis, into cranial and caudal tubules—collecting tubules of the first order, later *calyces majores*—occurs by the time the embryo is ten millimetres long. At this time the kidneys are caudal to the umbilical hypogastric arteries. They are supplied by blood vessels coming from the middle sacral and umbilical arteries. A rich capillary network of arteries from the inferior mesenteric and middle sacral and of veins to the posterior cardinal has been demonstrated in pig embryos by Jeidel. The author has observed the middle sacral and hypogastric arteries sending branches to the region of the kidney in human embryos of nine and thirteen millimetres in length. As the kidney assumes a higher position it is vascularized by branches from the aorta. Bremer has demonstrated a rich periaortic capillary network; he believes the definitive renal artery to be one of the elements of this network which has been so situated as ultimately to take over the vascular supply of the kidney and he explains various anomalies of the renal blood supply as due to the development and persistence of anastomoses within this network. The mesonephric arteries are part of this periaortic network being ventrolateral branches of the aorta. They form a capillary network about the kidney, Wolffian body and developing sex gland and the commonly accepted view is that one of the mesonephric arteries is retained by the kidney for its permanent renal artery. As expressed by Felix, the kidney climbs upwards on the mesonephric arteries as though on a ladder. As soon as sufficient blood supply is assured the caudal branches separate from it. As soon as the kidney has acquired its definite position, it possesses several renal arteries and of these one becomes gradually enlarged to form the definitive artery, while the others either degenerate or persist as accessory renals. If there be retardation or cessation of the ascent of the kidney, the blood vessels supplying it at the particular stage will be retained as the permanent blood supply. Anomalous blood vessels are therefore the natural consequence of congenital misplacements. They are not of ætiological significance, but give indication of the stage at which the anomalies were produced.

Chronic Duodenal Ileus.

G. ROBERTSON (*Surgery, Gynecology and Obstetrics*, February, 1925) says that chronic duodenal ileus is attributed to the constricting pressure of the superior mesenteric vessels as they cross the duodenal wall. It is said to be a prominent feature of general visceroptosis. The operations proposed for it vary from fixation of a mobile caecum—thus to remove the abnormal traction of the ileo-colic branch of the superior mesenteric artery upon the main trunk crossing the duodenum—to an anastomosis of the gut across the main trunk of the vessel or mesenteric root, duodeno-duodenostomy. That any normal arterial trunk should be capable of producing obstruction of the gut is, the author considers, to say the least of it extraordinary. If this be a genuine mechanical ileus, it follows that an anastomosis should cure it, but the author cites cases to show that such does not happen and he feels confident that as time passes the "superior mesenteric artery pressure" theory will fade until it disappears altogether from the horizon.

Multiple Xanthoma of the Tendons.

J. E. MCWHORTER AND C. WEEKS (*Surgery, Gynecology and Obstetrics*, February, 1925) give a review of the literature on xanthoma and record the notes of a coloured patient, thirty-nine years of age, who had multiple xanthomatous lesions of the tendons. They consider that *xanthoma tuberosum multiplex* and all forms of xanthoma are the result of a systemic disease in which hypercholesterolæmia is an essential feature. These growths are probably irritative connective tissue reactions due to the deposit of cholesterin. Since recurrence of these growths probably follows their removal, surgical interference is indicated only in those cases in which there is loss of function or pressure disturbance.

Papillary Cyst-Adenoma of the Kidney.

F. S. PATCH AND L. J. RHEA (*The Journal of Urology*, December, 1924) record a case of papilliferous cyst-adenoma of the kidney associated with papillomatous growths in the pelvis, ureter and bladder. The patient was a male, sixty-eight years old. The cortical tumour was situated immediately beneath a depression in the surface. This depressed area looked bluish from the surface owing to a small collection of blood just beneath the capsule. The tumour extended from the extreme margin of the cortex downwards into the kidney substance, but at its greatest depth reached only to within two centimetres of the pelvis. The tumour measured two and a half centimetres by two centimetres in its greatest diameters. The tumour was not as dense as the surrounding kidney tissue and was composed of pale staining epithelial cells the nuclei of which stood out sharply. It had the structure of a papillary adeno-cystoma of the kidney of a comparatively low grade of malignancy. Sections of the kidney outside the tumour area revealed no tumour cells. The arteries showed a moderate degree of arteriosclerosis and here and there were sclerosed glomeruli. There were a few small areas which manifested scar formation and infiltration with lymphocytes. Sections from the pelvis of the kidney and from the ureter showed papillomata of a comparatively low degree of malignancy. The question arises as to the relation between the cortex of the kidney and the papillomata in the pelvis and ureter. Those in the bladder were obviously transplanted from above. Kretschmer's suggestion of a retrograde extension of a primary pelvic tumour along the kidney tubule seems to the authors to be less reasonable than the reverse course, which they are inclined to believe is the one that has taken place. However the two tumours were not histologically identical, the cortical tumour being a papillary cyst-adenoma and the pelvic ones villous papillomata. Thus the existence of two primary tumours has much probability in its favour and cannot be easily controverted. Kretschmer reports eleven cases of papillary cyst-adenoma of the kidney with metastases. In his case the pelvis was free from any tumour growth. He states that Dunn was able to demonstrate with microscopical sections a communication between the cysts and the convoluted tubules. The authors regard the concomitant lesions as interesting, especially the not unusual production of a moderate partial hydro- or hæmato-nephrosis proximal to the pelvic tumours and also the areas of chronic, cortical, sclerosing nephritis. The cortical tumour had appeared in one of these areas represented by a depression on the outer surface of the kidney. Similar areas were noted elsewhere in the kidney. The submucous tissues of the pelvis showed infiltrations with small lymphocytes. Whether any ætiological significance in the production of the tumours is to be ascribed to these areas of inflammation, is open to question, though in the case of the pelvic lesions, they may be just as reasonably regarded as secondary to the papillomata.

Primary Endothelioma of the Peritoneum.

C. T. CROWDY (*Surgery, Gynecology and Obstetrics*, February, 1925) describes a new growth which diffusely involved the pelvic peritoneum and extended to the abdominal peritoneum in the form of flat patches or plaques, but always limited to the serous surfaces. The author recognizes that the endothelial (genuine peritoneal) derivation of these neoplasms is not always easily established and their strict separation from intestinal cancers or from misplaced embryonic gut rests is often attended with difficulty.

MORPHOLOGY.

Development of Isolated Chick Primordia.

LEIGH HOADLEY (*Biological Bulletin*, June, 1924) describes the results of a series of experiments in grafting chick primordia on to the chorio-allantoic membrane of another egg. By this means the independent differentiation of the primordia may be readily studied since the chorio-allantoic membrane acts merely as a source of nourishment. When the primordium of the eye is treated in this way and removed from a thirty-six hour chick embryo, it is possible for it to continue its development and differentiation and form an eye which is remarkably close to normal in structure. Grafts from the nasal region gave a very similar result and the departures from normal are regarded as due to variation of the mechanical factors controlling the area. The otic vesicle also exhibited the same power of independent differentiation. In the case of the mesencephalon region the gross morphology of the part was somewhat altered by the change in environment and the absence of afferent tracts, but the differentiation of the cellular constituents was specific.

Compensatory Hypertrophy of the Ovary.

C. G. HARTMAN (*American Journal of Anatomy*, March 15, 1925) gives the results of a series of experiments on semispayed opossums. In practically all cases the remaining ovary increased from one and a half to eight times in size and weight with an average increase of three times the original. The increase was found to be due to growth of an increased number of Graafian follicles. The average number of eggs discharged or *corpora lutea* formed was thirty in the ovary of a semispayed animal as contrasted with eleven in the control animals. Semispaying thus acts as a stimulus to the surviving ovary. Whether the operation could be used to overcome certain cases of sterility due to slight sluggishness on the part of the ovaries must be decided by further experiment.

Subarachnoid Space and Meckel's Cave.

H. S. BURR AND G. B. ROBINSON (*Anatomical Record*, February, 1925) give the results of an investigation with regard to the extent of Meckel's cave. They found that the meningeal covering of the Gasserian ganglion is densely adherent on the anterior surface and on the distal third of the posterior surface. On the proximal two thirds of the posterior surface the ganglion is separated from the *dura mater* covering the petrous bone by an arachnoid membrane and a definite subarachnoid space that communicates freely with the *cisterna pontis*. Hence injection of toxic substances into the ganglion is fraught with danger. About one millimetre anterior to the ganglion are sympathetic connexions with the ophthalmic division of the nerve. Ulcers of the cornea following operation on the ganglion may be due to trauma of these connexions. The greater superficial petrosal nerve runs in a medial direction directly under the *dura mater* on the petrous bone and then immediately behind the mandibular division of the fifth nerve. Facial palsies following ganglion operations may be due to indirect injury of the facial nerve through the agency of the greater superficial petrosal and the geniculate ganglion. Transorbital puncture offers a means of draining or irrigating the basal subarachnoid cisterns.

Fat Digestion, Absorption and Assimilation in Man and Animals.

S. H. GAGE AND P. A. FISH (*American Journal of Anatomy*, September 15, 1924) give an account of research they have carried out at Cornell University on the fat digestion, absorption and assimilation in man and animals as determined by the dark field microscope and fat soluble dye. They stain food fat with non-poisonous red dyes (Sudan III. and scarlet red) which cling to the fatty acids through all the digestive changes, during its rebuilding when absorbed and throughout its entire journey, till finally the bright pink colour indicates exactly where the fat is laid down in the body during the process of assimilation. With the aid of the dark field microscope they were able to observe the varying number of tiny fat globules (chylo-microus) in a given quantity of blood at varying intervals after ingestion. They were thus enabled to determine among other things the time of the appearance of fat particles in the blood after the ingestion of fatty food, the time required for a given kind and quantity of fat to be digested, absorbed and to disappear from the blood with any given individual or animal and to demonstrate the influence of mental conditions on digestion *et cetera* of fat and to determine the form in which fat is remobilized into the blood in case of prolonged fasting and so forth. Many experiments are described. In one fowls were given alternate feedings of coloured and uncoloured fat. Under these conditions the egg yolk was found to be made up of successive layers of pink and yellow material which show as rings when the egg is boiled and sectioned. The article is accompanied by a series of illustrations in colour.

Further Evidence of Attrition in the Human Body.

A. W. MEYER discusses the question of normal, physiological attrition in the human body, adducing a great number of cases in which bursal walls, interbursal septa, fascial expansions, ligaments, tendons, fibro- and hyaline articular cartilages, articular discs, bony articular surfaces *et cetera* may all show not only the effects of attrition, but may be largely or even wholly destroyed by it (*American Journal of Anatomy*, September 15, 1924). Concrete examples are figured such as fraying and loosening of the ligamentous tissue and hyaline cartilage in the upper part of the hip joint. Such changes are found in articulations wholly devoid of evidence of arthritic disease. Similar fraying of the cartilages is frequently seen in the shoulder and knee joints. In the case of tendons three cases of fraying of the long head of the biceps are figured and the author has observed a score of cases of complete destruction of the intracapsular portion of the tendon of the long head of the biceps. Similar changes are figured in the prepatellar bursæ and in the paired tendons of the *peronei brevcs*. In the latter case the adjacent *peroneus longus* tendons were perfectly smooth and unaffected. Loose bodies may be formed in a joint from attrition without any evidence of pathological changes. In the bursæ the earliest change noticeable is a slight furring of the internal surfaces and later fine threads form. In the case of bones the author has seen several cases in which the styloid processes of the radius and ulna were almost completely destroyed through contact with the opposed carpals which had corresponding areas of wear. The author has often encountered cases in which cartilage has been worn down in a joint, so that bone is rubbing on bone. In many of them not the slightest evidence of any pathological change could be found.

An X Ray Injection Mass.

F. R. FERGUSON (*Journal of Anatomy*, April, 1925) gives instructions for the preparation of an injection mass for use in the study of material by means of X rays. The basis of the mixture is vermilion and the mass is stated to flow freely, to be homogeneous and easily prepared, to be miscible with "Formalin," water and blood and to set well. The mass is cheap to prepare and gives excellent results when used on the adult cadaver, the fœtus and on isolated organs. Radiographs to illustrate the results obtained accompany the article.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, Adelaide Street, Brisbane, on May 1, 1925, DR. V. MCDOWALL, the President, in the chair.

Death of Dr. Malcolm Leslie Cameron.

THE PRESIDENT made reference to the death of Dr. Malcolm Leslie Cameron and a motion of sympathy with his relatives was passed.

Albuminuria and Syphilis.

DR. S. F. MCDONALD read the clinical history of a woman, aged thirty-five years, who suffered from a brachial neuritis of the fifth and sixth cervical nerve roots. The patient gave a history of miscarriage at seven months, of a full term child which had died in a few days and of the birth of a normal, healthy child. In addition to the neuritis the patient had a skin eruption and her serum had reacted strongly to the Wassermann test. Examination of the urine had revealed a specific gravity varying from 1010 to 1030. The urine contained a large amount of albumin, but no casts and no blood. The urea concentration varied from 2% to 2.5%. No urine was passed through the night. The administration of mercury by mouth and by inunction had had no effect on the neuritis, but 0.6 gramme of "Kharsivan" had given her a good night's rest. Bismuth had been given with but little effect. Dr. McDonald had afterwards tried "Mercurosal" in half doses; this had produced considerable reaction, but the patient had stated that she was much more comfortable. At the time of the meeting the patient was receiving quarter doses of this drug and the albumin had been definitely reduced in amount.

DR. M. GRAHAM SUTTON stated that he was treating a syphilitic patient who was suffering from albuminuria. The results of the urine tests in this patient were normal. The kidney condition was apparently due to syphilis and was improving with treatment.

Sacral Anæsthesia.

A paper by DR. L. J. JERVIS NYE AND DR. C. L. PAINE, entitled "Sacral Anæsthesia," was read by DR. R. MARSHALL ALLAN (see page 29).

DR. C. A. THELANDER said that he considered that lumbar anæsthesia was preferable because only one puncture was necessary. Complications such as spinal meningitis occurred occasionally and he thought that regional anæsthesia was not necessary if a good general anæsthetic was obtainable. On the other hand, regional anæsthesia was very valuable to patients unsuited for a general anæsthetic. He always punctured the skin with a sharp pointed bistoury without any local anæsthetic. The needle could then be inserted with practically no pain to the patient. On the whole, he considered that caudal anæsthesia was probably better than anæsthesia produced by the trans-sacral route.

Post-Graduate Work Abroad.

DR. T. H. R. MATHEWSON read a paper entitled "Random Notes on Post-Graduate Work in England and Scotland" (see page 42).

DR. S. F. MCDONALD asked what arrangements existed in Glasgow for following up patients suffering from rheumatic heart conditions.

DR. E. S. MEYERS inquired as to the treatment of congenital syphilis and asked how long it was continued.

DR. A. V. MEEHAN said that the paper showed the importance of keeping accurate case records and the need of staff meetings to discuss deaths, interesting conditions and so forth. There was a great waste of valuable clinical material in Brisbane and the hospitals urgently needed registrars to keep case records up to date.

DR. V. MCDOWALL congratulated Dr. Mathewson on his interesting and all too brief notes. He inquired as to the average number of patients with congenital syphilis whose serum yielded permanently a response to the Wassermann test after treatment. He also wished to know for how long on an average weekly injections were continued in the case of patients whose serum gave a response to the Wassermann test.

After thanking the members for the reception of his paper, Dr. Mathewson said that efforts were made to follow up all patients with rheumatic heart disease. The children were taken by ambulances to special schools. Salicylate treatment was kept up for three months in the treatment of chorea, even when there was no cardiac involvement. In regard to the treatment of congenital syphilis intravenous injections of "Neosalvarsan" in doses of 1.05 gramme were given weekly for three months in conjunction with mercury. After an interval of a week or two the course was repeated and kept up for a year. Wassermann tests were made regularly and the treatment was continued until the reaction failed to occur. Lees, of Edinburgh, continued treatment with arsenic preparations for three years with monthly intervals for three months if the serum still reacted to the Wassermann test. Dr. Mathewson was not sure what happened after that period.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in conjunction with the Melbourne Hospital Clinical Society at the Melbourne Hospital on May 6, 1925. The meeting took the form of demonstrations conducted by the honorary staff of the Hospital.

Exophthalmic Goitre.

DR. S. V. SEWELL presented a female patient, thirty years of age, as showing an interesting sequence. Graves's disease had supervened after an adenoma of the thyreoid, unaccompanied by any thyreo-toxic symptoms and had been present for ten years.

The patient had been admitted to the Melbourne Hospital on May 1, 1925, and had stated that she had had a "lump in her throat" for fifteen years. Five years previously she had suffered great distress on account of the death of her daughter and shortly after that event had noticed for the first time rapid heart action, excessive perspiration and protrusion of the eyeballs. She had become subject to frequent headaches and had lost steadily in weight. These symptoms had abated to some extent after four and a half months' rest in bed three years previously. She complained that for the past five months she had been troubled by rapid action of the heart, headaches and great lassitude. The swelling in her throat had become tender, at times her breathing became distressed and she had difficulty in swallowing lumpy food.

Physical examination showed that the average pulse rate was 128 per minute, the systolic blood pressure was 140 and the diastolic 90 millimetres of mercury. Exophthalmos was conspicuous and von Graefe's sign was well illustrated. The skin was hot and damp and fine tremor was noticeable in the hands. Examination of the mouth showed that the teeth and gums were very unhealthy and the tonsils gave indications of septic infection.

The cardiac pulsation as observed at the apex beat was rapid and heaving in character; systolic bruits were audible at the mitral, pulmonary and aortic areas. This patient also furnished a good example of capillary pulsation.

The thyreoid gland presented a central, rounded, non-pulsating swelling and there was soft enlargement of both lateral lobes in which pulsation was apparent; the gland was not tender. The basal metabolic rate had been determined as 54.5.

Lobar Pneumonia: Thrombosis of Left Subclavian Vein.

DR. KONRAD HILLER showed a male patient, aged forty-six years, who had been admitted to hospital on April 5, 1925, suffering from acute lobar pneumonia. During the week succeeding his admission the patient had been very

ill, but at the end of that time the temperature had commenced to fall by lysis, the physical signs at the left base had indicated resolution of the pneumonic process and the man's general condition had rapidly ameliorated.

On April 26 he had complained of severe pain above the left clavicle, the pain being aggravated by deep inspiration, coughing or movement of the left shoulder joint. A rigor, rise of temperature to 38.7° C. and profuse sweating had followed the onset of the pain. The superficial veins over the anterior aspect of the left side of the chest had been observed to be congested and the supraclavicular fossa on the left side was swollen, red and tender.

On April 27 the whole of the left arm had appeared swollen, all the superficial veins being dilated. The arm had been tender and there was a palpable thrombus in the left subclavian vein. Since the date mentioned the arm had been less painful, although the dependent parts were still very tender. The latest development was that the thrombus had extended along the brachial vein and this vessel could be felt as a thick cord.

Raynaud's Disease.

Dr. Hiller's second patient was a young woman, twenty years of age, who was then an inpatient of the Melbourne Hospital for the fifth time.

She had first presented herself on September 12, 1923. At that time she had given the history that three years previously her legs had become mottled; at a later period "blood blisters" had formed which ultimately burst and resulted in ulceration. The ulcers were very slow in healing and generally twelve to eighteen months had elapsed before healing was complete. For a few months before her admission to hospital for the first time in September, 1923, the fingers of the patient's left hand had been very cyanosed and painful; the extremities were always cold unless warmed by artificial means.

At this time complement fixation tests had been carried out with the patient's blood serum in respect to hydatid disease, tuberculosis and syphilis (Wassermann test), but no reactions had been recorded. She had received a course of six intravenous injections of "Novarsenobillon" and some improvement had appeared to ensue. She had been discharged from hospital on January 11, 1924, but by this time the tips of the fingers of the left hand had separated by dry gangrene.

After three periods in hospital in the interval this patient had again been admitted on February 8, 1925. Since she had left after her last stay the second toe of the left foot had become painful and the tip had gradually separated. On February 5, 1925, the great toe of the right foot had become absolutely white and after remaining thus for a few hours had gradually become blue, painful and tender.

On February 10, 1925, Mr. Dew had operated and decorticated the femoral artery of the right side in its course through Scarpa's triangle for a distance of seven centimetres. A notable observation had been the very small size of the vessel. Subsequent to operation the cyanosis of the right great toe had slowly but progressively diminished until normal colour returned. No gangrene had supervened. Pain and tenderness in the toe had diminished *pari passu* with the cyanosis. Unfortunately on March 11 the little toe of the right foot had exhibited cyanosis and on April 1 the fourth toe had followed suit. The accompanying pains, however, had not been so severe as those formerly experienced. Other therapeutic measures had included electric baths, heliotherapy and general tonic treatment. A microscopical examination of the femoral sheath had not revealed any conclusive features.

Cardiospasm or Achalasia of the Cardia (Hurst).

Dr. S. O. Cowen presented a young man as providing a typical instance of cardiospasm. The patient had for some time experienced difficulty in swallowing, the dysphagia affecting solids more than liquids. He had complained of a sensation that food was obstructed in its passage and that it seemed to lodge at a point just below the lower end of the sternum. Frequent eructations of food into the mouth occurred, but this patient had not been affected by vomiting. Dr. Cowen stated that in general the subjects of cardiospasm vomited a great deal and that such vomiting was frequently self-induced. In the case of the young man under consideration there was regurgitation of fluid through the nose at night. There was also the unsual history of the vomiting of blood-stained pus on two occasions; this might have been from ulceration of the lower end of the œsophagus.

Dr. Cowen indicated that the general condition in his patient was very good. Wasting was, however, bound to occur if the cardio-spasm continued, but it would not produce the cachexia associated with malignant strictures. Investigations had not been completed; a characteristic radiogram had been obtained, but œsophagoscopy remained to be carried out.

The patient appeared to have been helped a little by the administration of belladonna. It was proposed to treat him by dilatation with mercury filled sounds after the manner of Hurst. The outlook was fairly good in a young patient, but in the older ones, many of whom were very neurotic, it was uncertain.

Tabetic Amyotrophy of Hands (Aran-Duchenne Type).

Dr. Cowen also presented a patient who exihibited all the classical signs of *tabes dorsalis*. The thoracic zone of anæsthesia was especially well delineated. A feature was the progressive wasting of the muscles of the thenar and hypothenar eminences in a manner strongly suggesting that of progressive muscular atrophy. The affected muscles exhibited no fibrillation.

Dr. Cowen said that it had been suggested that tabetic amyotrophies were due to degenerative neuritis of peripheral motor nerves or to constrictions of the ventral spinal roots by patches of syphilitic meningitis. More probably they were due to primary atrophies of the motor cells of the ventral horns of the cord. Such amyotrophies were not very common; they developed late in the course of the disease and progressed slowly.

Purpura Hæmorrhagica.

Dr. Cowen also discussed *purpura hæmorrhagica* as exemplified by a patient whose case record it is his intention to publish in full.

Friedreich's Ataxia.

Dr. Leslie Hurley demonstrated the physical signs in a girl, aged fourteen years, who had experienced difficulty in walking and had been affected by general "clumsiness" for the previous six years. Her disabilities had been much aggravated during the preceding twelve months.

Physical examination revealed shortening of the foot, prominence of the dorsum and deepening of the arch. The big toes were hyperextended at the metacarpophalangeal joints and flexed at the interphalangeal joints. Scoliosis was present. Lateral nystagmus to both sides was readily elicited. No response could be obtained to efforts to evoke the deep tendon reflexes and the plantar reflex was extensor in character on both sides. Although posterior column sensation was very deficient in the lower limbs, there was no other sensory loss. The movements of the lower limbs were ataxic and the gait reeling and tumbling, the patient tending to fall first to one side and then to the other. She also displayed Rombergism, thick and slow speech and at intervals nodding movements of the head. No history of Freidreich's disease in any other members of the family could be traced. The patient's serum had been examined by the Wassermann test and no reaction had been obtained.

Latent Syphilis.

Dr. Hurley also showed several patients who were suffering from latent syphilis. A male patient, aged fifty-eight years, had sought treatment for the relief of persistent headaches, undue tiredness and inability to carry on his work as a labourer. Three months previously he had suffered what he described as a "nervous

breakdown." On physical examination the cardiac second sound in the aortic area was noticed to be loud and of musical quality and percussion dullness extended for 1.5 centimetres to the right of the sternum in the first and second intercostal spaces. A positive finding had attended the examination of the patient's serum by the Wassermann test. Great improvement in the general health had followed the administration of "Arseno-benzol," iodide of potassium and mercury.

A labourer, aged thirty-three years, had complained of pain in the back of both legs and thighs, the pain had been of shooting character and had been rendered more severe by the movement of flexion of the hip joint when the knee joint was extended. Physical examination disclosed leukoplakia on the mucous membrane of both cheeks and enlargement of the supratrochlear glands. Positive evidence of syphilis was provided by the presence of a Wassermann reaction. A radiogram showed an area of absorption in the antero-lateral portion of the ilium; this was not regarded as being in any causal relationship to the pain, but was interpreted as a separate lesion of the nature of syphilitic osteomyelitis. Under treatment by antisyphilitic measures the patient was making good progress.

The complaint of an ironworker, aged forty-eight years, was that he had not felt well for six years. He could not concentrate on his work, his memory was very poor, he was very nervous and became easily excited. He was very irritable, worried about his own indecisiveness and much troubled by insomnia. Leukoplakia and enlargement of the supratrochlear lymphatic glands were the only signs detected by physical examination, but serological evidence of syphilis was furnished by a reaction to the Wassermann test.

Dr. Hurley said that he showed the three patients as illustrating the importance of signs such as early aortitis, palpable supratrochlear glands without evident cause, leukoplakia and symptoms of neurasthenia in the diagnosis of syphilis.

Pulmonary Hydatid.

Dr. Douglas Thomas discussed the clinical features in a male patient, fifty-seven years of age, who fourteeen years previously had first experienced an attack of severe pain in the left side of the thorax. The pain had lasted for several days and had been regarded by the physician in attendance at the time as being due to non-effusive pleurisy. Shortly afterwards pain had recurred in the left axilla and the patient was apparently very ill for a week or two during which time there had been much cough and expectoration. However, he had made a good recovery and six months later was quite strong again, having experienced no further chest trouble.

Nine months prior to demonstration he had suddenly been seized with severe pain in the upper portion of the abdomen on the right side and had been subjected to operation for acute cholecystitis. The gall bladder had been found acutely inflamed and full of stones.

Two days after operation the patient had become very distressed exhibiting a very rapid rate of respiration. By physical examination of the chest at that time dulness to percussion had been noted over the base of the left lung and in the left axilla; crepitation had been audible over both lungs and diminution in the vesicular murmur had been apparent on auscultation over the base of the left lung. No radiographic examination had been made at this time, but the patient had eventually done well and left the hospital.

During the previous six months he had progressively lost weight and had been troubled a great deal by cough with attendant copious expectoration. Hæmoptysis had occurred five months previously. The patient had complained of pain in the left side of the chest and of profuse sweats at night.

Examination on March 3, 1925, had disclosed a considerable area of dulness over the base of the left lung and in the left axilla. An X ray examination had been made and the skiagraphist's report was to the effect that a large rounded shadow, well defined, was to be seen in the region of the base of the left lung, the shadow extended dorso-laterally from the mediastinum to the chest wall and was situated at the level of the heart. It had been suggested that the underlying pathological change was due to the presence of a hydatid cyst in which calcification had occurred. Tubercle bacilli had not been found in the sputum, which contained a diversity of bacteria. The complement fixation test for hydatid disease resulted in no reaction, but an immediate reaction had been obtained by the Casoni intradermal test. At the time of demonstration expectoration was copious and the condition was regarded as being one of infection of an old calcified hydatid.

Pseudo-Pancreatic Cyst: Diabetes.

Dr. Thomas's second patient was a woman, forty-six years of age, who had first come under observation in the outpatient department in August, 1923. She had then complained of abdominal pain and loss of weight. Five years previously she had been told that there was a mass deep in the abdomen, but at that time had not submitted to investigation. Twelve months prior to that time she had suffered from several hæmatemeses and had been told that she had a gastric ulcer. During the previous four years the abdominal pain had gradually increased in severity and at time of demonstration she felt extremely weak. Examination had revealed the presence of a rounded mass, in size somewhat larger than a big orange, situated in the upper portion of the abdomen on the left side and apparently separate from the spleen; the tumour had been movable and could be displaced to the right of the middle line. Extensive investigations had been carried out and it had been found: (i.) that the urine contained a high percentage of sugar; (ii.) that concentration of the blood sugar was 0.436%; (iii.) that the urine contained twenty units of urinary diastase; (iv.) that the stool contained an excess of unsaponified fat; (v.) that the left kidney appeared on pyelography to be normal and that no changes were to be detected in the alimentary tract by radiography; (vi.) that no positive information was to be gained by complement fixation tests with respect to hydatid disease and syphilis.

Under a strict dietetic *régime*, rest in bed and fifteen units of "Insulin" three times a day the blood sugar had fallen to 0.154%. A further radiographic examination carried out by the technique of pneumo-peritoneum had revealed a definite rounded mass on the posterior abdominal wall.

On April 30, 1924, exploratory operation had been undertaken by Mr. Alan Newton. Immediately prior to operation twenty units of "Insulin" followed by the juice of half an orange had been administered. On her return from the operating theatre the patient had received thirty grammes of glucose *per rectum* and an additional twenty units of "Insulin."

The operation had been conducted through an incision in the upper portion of the left rectus muscle and at the outset the stomach had been seen to be pushed forward by a cyst which was much larger than had been estimated by palpation. It had extended downwards into left loin and upwards under the liver. Twelve hundred cubic centimetres of a brownish coloured fluid, sparkling with cholesterin crystals, had been withdrawn and the cyst marsupialized. Examination of the fluid had subsequently revealed the presence of cholesterol and lipase, but no trypsin had been detected.

The patient had borne the operation very well. The amount of "Insulin" had been increased to twenty units three times a day and the caloric value of the diet from 1,500 to 1,700 kilo-calories *per diem*. Under this *régime* the urine had been sugar free, but on several occasions sugar had again appeared in her urine so that it had been deemed advisable to diminish further the percentage of fat in the diet and increase "Insulin" to thirty units three times a day.

After draining for a few weeks the wound had closed and the patient was allowed to go home. At the time of her discharge she had been receiving a diet of approxim-

ately 1,800 kilo-calories *per diem* and a total daily allowance of forty-five units of "Insulin." Her general health had improved, she had gained one kilogram in weight and at the time of demonstration required only one hundred units of "Insulin" per week. It appeared, therefore, that the pancreatic function had been partially restored by the relief of the pressure from the cyst.

Diabetes Mellitus.

Dr. W. W. S. Johnston, D.S.O., M.C., discussed the record of a female patient who had first come under observation at the Melbourne Hospital in November, 1923. At that time her urine had contained a large amount of sugar, acetone and diacetic acid also being present.

The blood sugar had been determined as 0.312%. Her weight had been 35.4 kilograms. Great difficulty had been experienced in establishing a suitable diet and corresponding "Insulin" dosage. As a result the patient had become profoundly comatose at the end of December, 1923; she had remained in coma for several days.

During January and early February, 1924, her diet had consisted of carbohydrate, fifty-three grammes; protein, 61.5 grammes; fat, 109.5 grammes; a caloric value of 1443.5. At this time she had received sixty-six units of "Insulin" per day.

On February 7, 1924, the patient had appeared drowsy and during the following two and a half days had been in deep coma. "Insulin" had been continued and during one period of twenty-four hours one hundred and forty units in all had been given by intravenous and subcutaneous routes. To these measures she had responded well and had subsequently left the hospital at her own request. Her diet had then represented 829 kilo-calories and had been composed of carbohydrate, 17 grammes, protein 47.5 grammes, fat 64.5 grammes. The daily allowance of "Insulin" had been eighty units.

This patient was at the time of demonstration living thirty-five miles from Melbourne and carrying on the work of a farmer's wife. She looked and felt very well and weighed fifty-nine kilograms. She admitted having exceeded her diet as she could not carry on her work unless she did so. Her "Insulin" of which the dose was now sixty to seventy units daily, was ordered once a fortnight from Melbourne, when she reported for blood sugar estimation. The blood sugar varied from 0.162% to 0.200% and the patient stated that she felt better when the blood sugar was at the higher figure. There was usually a good deal of sugar and acetone in the urine, but the woman felt so well that she could not be induced to come into hospital again for correction of her diet.

Raynaud's Disease and Paget's Disease of the Nipple.

In Dr. Johnston's second patient both Raynaud's disease and Paget's disease of the nipple were exemplified. X ray therapy had just been instituted for the malignant disease.

Malignant Disease of the Nasal Septum: Pulmonary Tuberculosis.

Dr. F. Blois Lawton presented a male patient, aged forty-five years, who had been referred to him for an opinion regarding his chest. The earlier clinical history of this patient was very interesting and notes had been supplied by Dr. Douglas McArthur.

For the relief of nasal obstruction a submucous resection of the septum had been performed in 1919, but after the operation a small perforation had been noticed in the anterior portion of the septum. The patient was well for a time but later had begun to blow crusts from his nose and to complain of a return of nasal obstruction. In April, 1922, there had been a large perforation in the anterior part of the septum, the perforation being bordered by a bread fungating mass of tissue which greatly obstructed the air-way. Symptoms had been relieved by removal of the mass, but recurrence had taken place four months later. On this occasion the patient had been treated with radium and the immediate result had apparently been good.

In November, 1922, ulceration and perforation affected the hard palate, but the process had not been influenced by radium and X ray treatment was similarly of no avail. In February, 1923, a perforation had suddenly appeared in the soft palate just above the base of the uvula and one month later the uvula had sloughed. Deep X ray therapy had been instituted and although the last of the three applications was given in September, 1923, there had been no recurrence of the growth.

Mr. Dew had furnished a detailed report on the tissue removed from the septum and had concluded that it was of the same class of growth as that recently described by Woods as malignant granuloma.

Dr. Lawton indicated that he had found extensive pulmonary lesions and that the sputum contained tubercle bacilli.

Cervical Ramisection.

Mr. Basil Kilvington showed a patient on whom he had performed ramisection for the relief of spastic monoplegia. Two years previously the patient had suffered from a paralytic stroke affecting the whole of the left side of the body. She had since regained good use of the lower limb, but the upper limb had become useless by reason of spasticity and contracture of the muscles. Examination of the left upper limb had revealed the muscles contracted and rigid. Every joint had been acutely flexed, the patient had had very little movement at the elbow and wrist joints and force had been required to straighten the limb.

At operation on May 4, 1925, three branches from the left inferior cervical ganglion of the sympathetic to the brachial plexus had been divided. Slight hyperæmia of the left upper limb had been noted immediately after the operation.

On the following day hyperæmia of the limb had still been evident and the spasticity of the muscles had been much diminished. Much greater range of movement had been permitted at the elbow joint and the patient was able to extend the wrist and finger joints to a slight degree. By passive movement the wrist and finger joints could be completely extended.

Cyst of Femur.

Mr. Kilvington's second patient was a girl of sixteen years of age. Two and a half years previously she had first complained of severe pain in the left knee after exercise or long standing. For about two years she had been treated for *genu valgum* by means of a lateral brace applied from hip to foot; the knee had been firmly bandaged to the brace and eventually the splint had been discarded and the deformity much improved.

On March 16, 1925, the girl had been admitted to hospital on account of inability to stand on her left leg. She had stated that two days previously while walking she had experienced sudden, agonizing pain which radiated from the left knee to the hip joint.

The left lower limb had been everted and tenderness and swelling in the region of the upper third of the thigh had been present. No crepitus could be detected, but there had been 1.25 centimetres shortening of the limb.

A radiogram had disclosed a fracture through the upper third of the femur, the fracture traversing the lower half of a cystic area. Intradermal (Casoni) and complement fixation tests had supplied no evidence of hydatid disease.

On March 24, 1925, a second radiogram had been taken and the radiologist had reported osteoporosis in the left femur. There was some vertical trabeculation and the condition altogether had been similar to early *osteitis fibrosa*. No changes of a like nature could be detected in any of the other bones.

The affected limb was being treated in a Hamilton Russell extension appliance; the bones were in good position and there was no shortening of the limb.

Spastic Paraplegia.

Mr. Kilvington also showed a boy, aged fourteen years, whose lower limbs had been spastic and weak since infancy. The boy had never been able to walk well, but managed to hobble along with the aid of sticks. The lower limbs displayed wasting of the muscles of the thighs and calves, the feet were in *equino-varus* position, flexion

of the knee joints and the rigidity of the muscles were present. The thighs were maintained in adduction, but there was fair range of movement at the knee and ankle joints.

Scars of a former operation for section of the adductor muscles were noted. The quadriceps and Achilles tendon reflexes were very active on both sides and the plantar reflexes were extensor in character.

Operation was undertaken on March 13, 1925, for lengthening the tendons of the semi-tendinosus, *biceps femoris*, and *tibialis posticus* muscles on both sides; the operation had also included bilateral tenotomy of the Achilles tendons.

The limbs had been maintained in good position in plaster of Paris and the boy was being re-admitted for the operation of ramisection.

Multiple Bursitis.

MR. HAROLD DEW demonstrated a man, aged fifty-five years, who had sought advice on account of dull aching in the region of the right knee joint. There was some swelling in this situation, the size of which, though varying from time to time, had on the whole increased during the preceding few months.

Cystic swellings were to be seen in the region of the prepatellar tendon, the subpatellar bursa and the bursæ under the sartorius and gracilis muscles. They appeared to have originated in chronic bursitis and to have thick walls and loose bodies in the lower cysts. A little grating accompanied the movements of the knee joint which on the whole were not impaired. No other joints or bursæ seemed to be affected. He looked upon the process as an occupational traumatic chronic bursitis and recommended excision of the affected bursæ. Diagnosis was to be made from tuberculosis and syphilis.

Recurrent Hydatid of Liver.

Mr. Dew discussed the case of a man, aged thirty-seven, who gave a history of two previous operations for hydatid of the liver performed eleven and fifteen years previously. He complained of pain in the upper portion of the abdomen and considered that he had another cyst. A rounded swelling could be felt in the region of the left lobe of the liver; this swelling was not tender and could not be said to be definitely cystic.

A radiogram showed elevation of the left and central portions of the diaphragm which might be interpreted as due to the presence of a fresh cyst or as fixation following the former operations. The complement fixation test had not been performed, but the response to the Casoni test appeared as an immediate wheal without the second phase of erythema.

Fracture of Cervical Spine.

Mr. Dew's third patient was a young man who had struck his head when diving into a swimming pool on February 14, 1925. He had not been rendered unconscious, but lay for half an hour after the accident, at the end of which time he felt no bad effects except some pain in the lower cervical region. He had noticed no limitation of movement.

On clinical examination it had been found that the movements of the cervical portion of the spine were restricted when flexion and rotation were attempted. There had been no neurological symptoms or signs, but jarring the vertex had given rise to pain in the cervical portion of the spine. A radiogram had disclosed a fracture of the fifth cervical vertebra. He had been treated by fixation of the neck in a plaster collar for two months.

Kümmel's Disease.

Mr. Dew said that he had intended to demonstrate an example of Kümmel's disease, but the patient had not kept the appointment. This was a condition in which a slowly developing kyphosis, root pains and limitation of movement appeared after a slight injury. It was due to a rarefying osteitis in the region of a fracture which was often unrecognized at the time it was sustained. Another feature was that there was often a latent period between the injury and the first development of symptoms.

Osteomyelitis.

MR. C. W. B. LITTLEJOHN presented a male patient in whom osteomyelitis of the sternum had supervened on septic infection of a submammary injection of saline solution. The condition at the time of the meeting was of fifteen months' duration and he proposed to remove the sequestrum shown in the radiogram as occupying the situation of the lower end of the sternum.

Osteomyelitis of the parietal bone sequent on a fracture of the vertex of the skull was seen in a female patient aged thirty-eight years. Seven weeks had elapsed since the injury. Mr. Littlejohn exhibited the radiogram.

Non-Tuberculous Psoas Abscess.

Mr. Littlejohn's third patient was a man who had been affected with extensive suppuration in the substance of the psoas muscle; the abscess was due to pyogenic infection and had originated metastatically from a carbuncle on the neck. A radiogram showed that the vertebral bodies were not affected. After draining for twelve months the sinus had closed after the injection of bismuth paste.

Carcinoma of Breast: Metastasis in Bone: Regeneration of Bone After Deep Therapy.

DR. L. J. CLENDINNEN and DR. HOWARD PRAAGST exhibited a very large number of radiograms effectively displayed and several patients as showing results attendant on radium and X ray therapy.

The first patient was a woman, aged thirty-seven, who had undergone a radical operation for carcinoma of the breast eighteen months previously. Eleven months later she had been troubled by severe pain in the left side of the pelvis; the pain seemed to travel down the left lower limb and eventually there had been considerable loss of power in the limb. A radiogram had revealed the presence of a metastatic growth situated in the outer portion of the wing of the left ilium and occupying the greater portion of this bone. A course of deep X ray therapy had been commenced on January 29, 1925, and a second course was initiated in April. The patient walked normally and had gained in weight.

Dr. Clendinnen exhibited radiograms taken before and after treatment and in the more recent film regeneration of practically the whole of the affected portion of the ilium was shown.

Sarcoma of Maxilla.

A very striking result was seen in the case of a woman who first came to the Melbourne Hospital on January 20, 1925. A stereoscopic photograph taken on that occasion and shown at the meeting conveyed an excellent impression of the large fungating mass which had involved the right superior maxilla. There was much facial asymmetry and a necrotic portion of the growth had opened on to the right cheek. There had also been a large swelling on the right side of the neck and in this two large glands could be detected. The patient had elected to go to a Chinese herbalist for treatment and when she returned on March 3 the growth had made rapid progress.

Deep therapy had been commenced on March 4 and radium treatment on March 15; in each instance maximum doses had been employed. The face had been almost normal in appearance within ten days and at the time of demonstration there was no facial asymmetry. The nose had been examined by a rhinologist and he had reported that he could find no pathological change.

Carcinoma of Mouth.

Another patient shown by Dr. Clendinnen and Dr. Praagst was a man, aged seventy-eight years, who when first seen in September, 1923, had displayed a fungating and inoperable carcinoma of the floor of the mouth. A stereoscopic photograph was shown as depicting the condition before treatment was commenced and from this it

was seen that the neoplasm had occupied practically the whole of the floor of the mouth. Irradiation by radium had been commenced on September 26, 1923; deep therapy had been applied on October 1 and October 3 and a further exposure of the tumour to radium had been made on December 5, 1923. The patient had received no treatment since and the tissues of the floor of the mouth showed no trace of the former malignant growth.

Chronic Lymphatic Leuchæmia.

An interesting case record was provided by a man, aged sixty-eight years, who first came under observation at the Melbourne Hospital in December, 1920. The diagnosis of lymphatic leuchæmia had at that time been established, the salient clinical features being enlargement of the lymphatic glands in both axillæ and in the abdomen, and a total white cell count of 65,000 per cubic millimetre; 85% to 90% of the leucocytes had been small lymphocytes and there had been myelocytic forms. X ray therapy had been continued at intervals during the four and a half years that the patient had been under observation and he had been maintained in moderately good health. At the time of demonstration the leucocyte count was 5,400 per cubic millimetre.

Malignant Disease and Deep Therapy.

Other interesting patients in the radiological section in whom good results had followed radium and deep therapy were a woman, aged fifty-five years, who had been affected with a sarcoma of the maxilla, and another female patient who had been successfully treated for carcinoma of the thyreoid.

Cerebro-Spinal Syphilis.

Dr. H. F. Maudsley discussed the case of a man, aged thirty-one years, who had first come under his observation three weeks previously. It had been ascertained that for the previous four months the patient's manner had been strange and exalted; he was said to be always laughing and talking and he had become unreliable at his work, which was that of a bootmaker. His behaviour had not been objectionable. He had contracted syphilis at the age of eighteen and had undergone a course of treatment; otherwise his health had been good. On neurological examination it was noted that the left pupil was larger than the right, the Argyll-Robertson phenomenon was apparent on the latter side. The left pupil reacted very sluggishly to light. The patient's articulation was slurred, especially when he attempted long words; slight tremor was evident in the tongue.

All the tendon reflexes were exaggerated, the left quadriceps reflex particularly and on the left side of the abdomen the activity of the superficial reflexes was diminished. The plantar reflex was extensor in character in the left foot, but was of a normal flexor type in the right foot. No sensory disturbances could be demonstrated and there had been no loss of sphincter control. The Wassermann test had been carried out on both blood and cerebro-spinal fluid and in both instances had yielded positive (+++) evidence of syphilis. The cell content in the cerebro-spinal fluid was raised to eighty per cubic millimetre.

Parkinsonism.

Dr. Maudsley's second patient, a man aged forty-five years, had been perfectly well until eighteen months previously when he had contracted "influenza." During this illness he was drowsy, somewhat delirious, and had complained of acute pain in his limbs. As far as could be ascertained there had been no diplopia. Dr. Maudsley said that in view of subsequent events he was confident that the illness had been an acute attack of epidemic encephalitis.

After the acute stage of his illness the patient had remained drowsy, irritable and unable to return to work. Gradually he had become child-like and irresponsible; he had developed a staggering gait and had complained that he could not recognize people, although he had no difficulty in getting about. He had been in that condition for the previous ten months.

He presented a mask-like facial expression, but muscular rigidity was not general. The pupils, fixed to accommodation, reacted sluggishly to light. There was no loss of muscular power, but in walking the patient was always inclined to stagger to the left side. The deep and superficial reflexes were present and of equal activity on both sides; the plantar responses were flexor in type.

Great hyperæsthesia was apparent on the soles of the feet; the act of eliciting the plantar reflexes gave the patient the sensation of walking on sharp stones.

Mentally he was unstable, emotional and child-like in demeanour; his perceptive powers were good and he usually said that he felt "grand."

Dr. Maudsley said that he regarded this patient's condition as a sequel of *encephalitis lethargica*. The interesting points were (i.) Parkinsonism limited to the facial muscles and manifestations of thalamic overactivity confined to the soles of the feet; (ii.) absence of accommodation reflex and presence of light reflex, this had been lately described as a rare complication of this condition; (iii.) mental changes which did not seem to be advancing.

Ophthalmological Conditions.

Dr. Leonard Mitchell showed a number of patients in whom such ocular changes as papillœdema, retinal exudate and hæmorrhages and arteriosclerotic changes in the retinal vessels were well shown. Full clinical notes were supplied.

Pellagra.

Dr. R. R. Wettenhall presented a married woman, aged thirty-three years, whom he had shown as exemplifying pellagra at a former clinical meeting in May, 1924 (The Medical Journal of Australia, July 19, 1924). In May, 1924, the patient had exhibited the nervous, alimentary and cutaneous manifestations of the disease; there had been much vomiting, severe prostration and depression and loss of muscular tone. The face had been red, irritable and puffy, the tongue displayed definite glossitis and the backs of the hands and forearms manifested the characteristic dermatitis. The dietary had been found to be defective in that carbohydrate preponderated and suitable protein was deficient. The patient had been in the habit of taking meat in an overcooked condition. Under a *régime* comprising high protein diet, underdone meat and administration of dilute hydrochloric acid no further attack had occurred and Dr. Wettenhall pointed out that the patient showed dark brown pigmentation of forearms, backs of the hands, face and neck. A recent test meal demonstrated that there was still a complete absence of free hydrochloric acid from the gastric content.

Psoriasis.

Psoriasis of scalp, body and limbs was seen in a girl aged seventeen. Dr. Wettenhall said that the patient was being treated in the way suggested by Schamberg, of Philadelphia, by the administration of 0.3 mil (five minims) of a 1 in 1,000 solution of adrenalin chloride three times daily.

Lupus Erythematosus.

Dr. Wettenhall's third patient was a woman, aged thirty-eight years, in whom *lupus erythematosus* had been treated by radium many years previously. She showed a totally inactive scar on the right cheek and a smaller scar on the tip of the nose. Although tuberculous glands were subsequently removed from both sides of the neck there had been no activation of the process on the face.

Keloid.

Extensive scarring of the left arm and part of the trunk as the result of burns was seen in a man aged forty years. On the left side of the neck was a large keloid with which was associated much crusting and infection of the beard area of that side. X ray treatment had been commenced and was to be continued; local treatment had greatly reduced the infection.

Rupial Syphilide.

Dr. Wettenhall showed a man as presenting an example of rupial syphilide prior to treatment. The lesions consisted of massive, heaped, shell-like crusts of a dirty grey colour; they were localized to the region of the left ankle which had been injured some time previously.

Epithelioma.

The next patient had a depressed healthy scar on the end of the nose. A tumour of three and a half months' duration had formerly occupied the site; it was raised above the surrounding skin about half a centimetre, sharply demarcated and crusted on the surface. Dr. Mollison had examined a microscopical section and had reported epithelioma. Ten milligrammes of radium bromide had been applied through a filter of one half-millimetre of silver for sixteen hours.

Rodent Ulcer.

Dr. Wettenhall showed a man, aged sixty-five years, as possessing the type of skin associated with the development of multiple keroses and rodent ulcers on the face and hands. The patient's epidermis was thin and of a high colour. A small button-like rodent ulcer was growing under the left eye. Two rodent ulcers on the face had been successfully treated with radium, the results being smooth, sound, unobtrusive scars. An ulcer had been surgically removed from the forearm and a new one was developing in the scar. The ulcer under the eye would be treated by radium.

Keratoses.

A woman, aged sixty-three years, presented numerous keratoses situated on the forehead, cheeks and hands. She was thickly covered with the brownish keratotic plaques which were all superficial in character. There had been no development of rodent ulcers and the state of the skin had greatly improved with the use of one part of castor oil in five parts of rectified spirit.

Dr. Wetttenhall contrasted this patient with the one immediately preceding.

Dermatitis Venenata.

A labourer from the Mallee district in Victoria was shown as illustrating *dermatitis venenata*. The external irritant responsible had not been definitely identified but stinkwort was suspected. The trouble had cleared rapidly while he was a patient in the Melbourne Hospital. He had returned to the Mallee, however, to his former environment, had slept in his old blankets and the condition had returned. Vesiculation had cleared away, but redness, some crusting and much exfoliation remained; these changes were seen on the hands and arms particularly and to some extent on the face.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Blakemore, John Howell, M.B., Ch.M., 1924 (Univ. Sydney), Cooper Street, Strathfield.

Conolly, William Arnold, M.B., Ch.M., 1925 (Univ. Sydney), St. John's Rectory, Gordon.

Florance, Frederick Claude, M.B., 1924 (Univ. Sydney), Goodooga.

Congress Notes.

HEALTH CONGRESS.

THE ANNUAL CONGRESS OF THE HEALTH ASSOCIATION OF AUSTRALASIA will be held in Melbourne from October 5 to October 9, 1925. The President of the Association is Sir James Barrett, K.B.E., C.B., C.M.G.; the Vice-President is Dr. J. H. L. Cumpston, Director-General of Health of the Commonwealth, and the Honorary General Secretary is Mr. E. W. Welford, of 396, Flinders Lane, Melbourne. The Executive Committee and the General Committee have many members representing the Victorian Branch of the British Medical Association. The Medical Women's Association of Victoria is also well represented.

The Executive Committee are making a serious effort to gain the collaboration of the general public with the medical profession in its campaign to prevent disease. Simultaneously with the congress a Health Week will be organized and a Health Exhibition will be opened to the public. Both activities are under the auspices of the Health Association of Australasia.

The provisional programme of the Health Congress has been issued. The subjects for discussion include the question of housing in relation to health, the welfare of women and children, the prevention of dental disease, the problem of the mentally deficient and the supranormal child and the prevention of maternal mortality and morbidity. Popular lectures will be delivered on the cancer problem by Dr. C. H. Kellaway and on dental disease by Dr. J. Polack.

The congress is open to members of the several State Branches of the Health Association of Australasia. Medical practitioners interested in preventive medicine and desirous of attending the meeting should communicate with the Honorary Secretary of the Branch in the area of which they reside. The Honorary Secretaries are given below for this purpose:

New South Wales Branch: Honorary Secretary, Miss Agnes Scobie, Department of Agriculture, Sydney.

Victorian Branch: Honorary Secretary, Dr. J. Polack, 105, Collins Street, Melbourne.

Queensland Branch: Honorary Secretary, Captain E. R. B. Pike, Queensland Ambulance Transport Brigade, Anne Street, Brisbane.

South Australian Branch: Honorary Secretary, J. P. Marcus, Esquire, Globe Chambers, Adelaide.

Medical practitioners residing in Western Australia or Tasmania should apply to Dr. F. R. Kerr, Commonwealth Department of Health, Spring Street, Melbourne.

Correspondence.

CHRONIC SINUSITIS.

SIR: I am pleased to see Dr. Kent Hughes's letter criticising certain points in my paper on nasal infections.

We as medical men have always considered it a point of honour amongst us that if we find out anything which we think will be of benefit to humanity to impart the knowledge to all practising our profession. When new ideas are put forward, obviously criticism is invited. This is an excellent thing, as it often helps to expose wrong deductions and is sometimes beneficial in pushing forward the truth which surely all of us are anxious to know, although at times one begins to doubt this, as people do hate having their long cherished ideas broken up, yet if progress is to be made, this must continually be being done.

Dr. Kent Hughes starts off with: "I have laboured for years to impress upon the profession the importance of sinusitis in general disease" and almost immediately follows it by saying that "I have yet to see a case of sinusitis which in my opinion (I am pleased he puts that last clause in) produces a general infection if we except digestive disturbances from swallowing of mucopus."

On logical grounds why should sinusitis not cause general infection? Surely the conditions in sinusitis where there is a retention of pus often under great pressure can only be rivalled by such a thing as an apical abscess at the root of a tooth, pyelitis or cholecystitis

with obstructed outlets. There are certainly all the conditions present for such infection and it has been my experience to find some of the worst forms of infection and toxæmia under these conditions which are promptly relieved by clearing up the infection.

Dr. Kent Hughes mentions digestive disturbances following the swallowing of muco-pus. I would like to ask him on what grounds he bases his opinion that the gastric disturbance was due to the swallowing of the muco-pus. I grant that such an idea is widely accepted, but that does not prove it is true, as the gastric juices with normal acidity have great capabilities of destroying bacteria. It appears far more likely that those disturbances are from the toxæmia from the pus under retention. Likewise, there is very little chance of the lungs becoming infected *viâ* the trachea, as Nature has provided ample means of protection in that direction, but when we consider that this big infected area of nasal mucosa often under pressure is being drained by lymphatics emptying into the mediastinal glands and from there taking the same course along the bronchial tubes as we see so often in phthisis and known as hilus thickening, can we hesitate in considering which is the most likely cause of chronic bronchitis, infected mucus going down the trachea, which is almost an impossibility, or the infection carried by the lymphatics. The reason why Dr. Kent Hughes has not seen such conditions as rheumatism, pyelitis *et cetera* is simply because none of us in the past have looked to the nose as a possible source of infection. We have not only failed to look to it as a source of infection, but have ignored it altogether except in the grossest of troubles.

This is exactly the object for which my paper was written, to bring before the notice of the profession the prevalence of this condition, its association with the more serious diseases and an easy way in which a great deal of it can be eliminated. "The diagnosis of sinusitis upon which Dr. Pern depends, is loose and inaccurate." This is the statement of Dr. Kent Hughes. It is not criticism and is valueless, as he does not say why he considers it loose and inaccurate. I am as eager to arrive at the truth of the subject under discussion as Dr. Kent Hughes and am only too glad if anybody will point out to me where my views as already stated, are wrong. If Dr. Kent Hughes can convince me that anybody with a chronic discharge of pus into the naso-pharynx, is free from sinusitis, except possibly in one or two uncommon pathological conditions, I shall be very pleased. "And two of his patients he showed me at St. Vincent's clinical meeting did not impress me as cases of sinusitis." I think I am quite right in saying that all the patients shown on that occasion had recovered from their sinus infection, so I can quite understand how they did not impress him as cases of sinusitis. "It would be important for Dr. Pern to demonstrate the permanent efficiency of colloidal manganese." There is no suggestion in my paper that colloidal manganese prevents the nasal mucosa from becoming permanently free from infection; as long as colds are prevalent, so will the liability to infection last. In such cases a few doses will rapidly clear it again. I do not claim it is a specific in all cases. If there are any who have sufficient interest in the matter to pay me a visit at my clinic at 9.30 on any Tuesday or Friday, I shall be extremely pleased to show them plenty of cases other than gastric disturbances as the result of sinusitis and the results of treatment. It will be a shock to many to hear that 25% of the patients attending their medical clinics have sinus infection; yet it is true for all that.

Yours, etc.,

SYDNEY PERN.

12, Collins Street, Melbourne,
June 12, 1925.

THE WILLIAM MACEWEN MEMORIAL FUND.

DR. C. DUGUID has forwarded to us a cheque for two guineas as a contribution to the William Macewen Memorial Fund. He writes that during the week that Sir William was in South Australia he had the honour to be his host as it had been his privilege in the past to have been successively student, house surgeon and university assistant to him. "The old chief was as straight as steel and as reinforcing."

The total now stands at twelve guineas.

MEMORIAL TO THE LATE ALLAN PETER McLEOD.

WE have been asked to bring to the notice of members that some friends of the late Allan Peter McLeod have suggested that a memorial might be placed in the Mater Misericordiæ Hospital, Brisbane. The suggestion was originated by Mr. W. A. Hamilton who had travelled with Allan Peter McLeod to England; Mr. Hamilton started the fund with a gift of twenty-five pounds and Mrs. Hamilton has contributed a like sum.

Dr. A. T. Nisbet who has taken charge of the fund, intimates that if between four hundred and five hundred pounds can be collected, it is proposed to furnish a ward to be called the "McLeod Ward" in the Children's Wing of the Mater Misericordiæ Hospital as soon as this addition to the hospital is built. Should a sufficient amount of money not be available, a second proposal has been put forward to purchase an operating table of the latest design to which would be attached a brass memorial plate.

The following donations amounting to £152 8s. have been received:

	£	s.	d.
Mrs. W. A. Hamilton	25	0	0
W. A. Hamilton, Esq.	25	0	0
Dr. A. T. Nisbet	10	10	0
Dr. L. Cooper	10	10	0
Mater Misericordiæ Hospital	10	10	0
Dr. E. D. Ahern	5	5	0
L. Bridge, Esq.	5	5	0
Dr. A. Callen	5	5	0
Dr. B. L. Clarke	5	5	0
Dr. J. V. Duhig	5	5	0
Dr. H. V. Foxton	5	5	0
Dr. J. C. Hemsley	5	5	0
Dr. P. J. Kelly	5	5	0
Dr. D. Sword	5	5	0
Dr. R. Weaver	5	5	0
J. L. Bridge, Esq.	5	0	0
P. Ward, Esq.	5	0	0
Mrs. L. Horstmann	2	2	0
Dr. E. S. Meyers	2	2	0
Dr. A. C. Halford	1	1	0
Dr. N. Lane	1	1	0
Dr. G. E. L. Marshall	1	1	0
Dr. R. G. Quinn	1	1	0

Donations may be sent to Dr. A. T. Nisbet, "Lauriston," Wickham Terrace, Brisbane. Their receipt will be acknowledged in these columns.

Proceedings of the Australian Medical Boards.

VICTORIA.

THE undermentioned have been registered under the provisions of *The Medical Act*, 1915, as duly qualified medical practitioners:

Bretherton, Reginald Victor, M.B., B.S., 1925 (Univ. Melbourne), 306, High Street, Windsor.

Larwill, James Alfred, M.B., B.S., 1925 (Univ. Melbourne), "Baroona," Toowong, Brisbane.

Mackay, Alan John Grange, M.B., B.S., 1925 (Univ. Melbourne), 412, Toorak Road, Toorak.

Oliphant, Marie Claire, M.B., 1920 (Univ. Sydney), 158, Alma Road, East St. Kilda.

Wilkinson, Frank Clare, M.B., Ch.B., 1915, M.D., 1917 (Liverpool), The University, Melbourne.

Obituary.

HENRY LEE GARDE.

We regret to report the death of Dr. Henry Lee Garde, of Maryborough, Queensland.

LIST OF MEMBERS.

Corrigendum.

We have been advised by the Secretary of the Victorian Branch that crossed swords indicating war service were omitted in the list of members in connexion with the names of Dr. S. E. Humphreys, Beauford, Dr. E. Field, 685, Glenhuntly Road, Caulfield, and Dr. W. R. Frayne, Rutherglen.

Books Received.

A SYNOPSIS OF GYNÆCOLOGY, by Arthur Gray, F.R.C.S., M.R.C.P. 1925. London: Edward Arnold & Company. Crown 8vo., pp. viii. + 352. Price: 10s. 6d. net.

ANNUAL REPORT OF THE SURGEON-GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES, FOR THE FISCAL YEAR 1924. Washington: Government Printing Office. Demy 8vo., pp. vi. + 310.

BUCHANAN'S MANUAL OF ANATOMY, INCLUDING EMBRYOLOGY, Edited by E. Barclay-Smith, M.D., J. E. Frazer, F. G. Parsons, F.R.C.S., W. Wright, F.R.C.S. Fifth Edition. 1925. London: Baillière, Tindall & Cox. Demy 8vo., pp. viii. + 1,702, with 810 illustrations. Price 35s. net.

CANCER: POST-GRADUATE LECTURES, DELIVERED UNDER THE AUSPICES OF THE FELLOWSHIP OF MEDICINE, Edited by Herbert J. Paterson, with a Preface by Sir John Bland-Sutton, LL.D., F.R.C.S. 1925. London: John Bale, Sons & Danielsson, Limited. Demy 8vo., pp. xviii. + 186. Price: 12s. 6d.

LECTURES ON DYSPEPSIA, by Robert Hutchison, M.D., F.R.C.P. 1925. London: Edward Arnold & Company. Crown 8vo., pp. 176. Price: 5s. net.

LES HEPATITES DYSENTERIQUES ET LEUR TRAITEMENT, par A. Valassopoulo et Pavlos Petridis; Prèface du Dr. E. Rist. 1924. Paris: Masson et Cie. Demy 8vo., pp. 147.

THE LIFE OF WILLIAM OSLER, by Harvey Cushing. 1925. Volume II. Oxford: The Clarendon Press. Royal 8vo., pp. x. + 727.

TREATMENT OF GONOCOCCAL INFECTION BY DIATHERMY: WITH AN APPENDIX ON THE TREATMENT OF OTHER FORMS OF ARTHRITIS BY DIATHERMY, by E. P. Cumberbatch, M.A., B.M., B.Ch. (Oxon), M.R.C.P., and C. A. Robinson, M.B., B.Ch. (Cantab.), D.R.M.E. (Cantab.). 1925. London: William Heinemann (Medical Books) Limited. Crown 8vo., pp. vi. + 150. Price: 7s. 6d.

Medical Appointments.

Dr. John Coffey (B.M.A.) has been appointed Deputy Commissioner of Public Health, Queensland.

* * * *

Dr. Ernest Leslie Le Souef (B.M.A.) has been appointed Assistant Medical Officer, Wooroloo Sanatorium, Wooroloo, Western Australia.

* * * *

The undermentioned have been appointed Medical Officers, Classes "C" and "B," Professional Division, Public Service, Victoria: Dr. Mary Lane (B.M.A.), Dr. Kevin Brennan, Dr. Marie Claire Oliphant (B.M.A.) and Dr. Ellen Irene Stahle (B.M.A.).

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xvi..

ADELAIDE CHILDREN'S HOSPITAL: Resident Medical Officers (Two).

ST. VINCENT'S HOSPITAL, SYDNEY: Relieving Honorary Radiologist.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellow's Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

JULY 14.—Tasmanian Branch, B.M.A.: Branch.
JULY 14.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 15.—Western Australian Branch, B.M.A.: Branch.
JULY 16.—Section of Neurology and Psychiatry, New South Wales Branch, B.M.A..
JULY 21.—Tasmanian Branch, B.M.A.: Council.
JULY 22.—Victorian Branch, B.M.A.: Council.
JULY 24.—Queensland Branch, B.M.A.: Council.
JULY 24.—Eastern Suburbs Medical Association, New South Wales.
JULY 28.—New South Wales Branch, B.M.A.: Medical Politics Committee: Organization and Science Committee.
JULY 30.—New South Wales Branch, B.M.A.: Branch.
JULY 30.—South Australian Branch, B.M.A.: Branch.
AUG. 4.—Tasmanian Branch, B.M.A.: Council.
AUG. 5.—Victorian Branch, B.M.A.: Branch.
AUG. 6.—Section of Orthopædics, New South Wales Branch, B.M.A..
AUG. 7.—Queensland Branch, B.M.A.: Branch.
AUG. 11.—Tasmanian Branch, B.M.A.: Branch.
AUG. 11.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 13.—Victorian Branch, B.M.A.: Council.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.